

PCPlus CAMPAIGN

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After first qualifying as a solicitor, Roger Gann got suckered in to the dark world of computer journalism, and is now combining both these skills for your delight

This issue, **Roger Gann** tackles a dispute with Tiscali, quests for refunds and replacements, and companies that go in hiding

Tiscali

Kevin Patch had a little spot of bother with Tiscali. Well, actually there were three spots of bother, not one, and they were a bit bigger than 'spots' – more big blobs of trouble really.

Kevin told us: "I've been a user of Tiscali for quite a while, and then about a year ago (roughly December 2002) I started using its broadband service. That's when the problems began.

"Firstly, my monthly payments were not being taken from the relevant account and I was contacted in May 2003. After a telephone discussion with the individual concerned I thought it was sorted. Then came another email saying that my bill with them still hadn't been paid. I telephoned again, and again. Eventually, I sent a number of letters – with no effective response. The outcome, was that eventually I received a bill for £285.25 (being a year's bill). I paid this in December 2003. In the meantime Tiscali had sent me letters complaining that I had not paid, saying that they would have to 'downgrade my connection to Pay As You Go and we will take action to recover money owed. I had been trying to pay for three months by this time!

"One of the things that persuaded me to remain a Tiscali customer was the offer of a free modem. They denied this, and no matter what I said, they charged me for it. To quote their letter from GM Gengan: 'Thank you for your recent letter. Your comments have been duly noted. I regret that our Finance department are unable to authorise the refund you requested.' Is this the kind of letter a customer-led organisation should send? I think not."

By this time Kevin had had enough and wanted out – he wanted to transfer his broadband service to another ISP, PlusNet, so he gave notice to Tiscali.

"On 30 December my broadband account was cancelled and I was unable to use the Internet. I then

signed on with PlusNet (excellent organisation by the way), via a colleague's web connection. Since then I've had nothing but problems due to the incompetence of Tiscali – they have yet to release the line. It's now the end of January and I've had a month of running my business using a standard modem. I transfer a lot of data between clients and myself, and this is taking up so much time it's become ridiculous!"

Finally, Kevin had some 'issues' with Tiscali's customer care. In fact, he had some harsh thoughts about it...

"It's non-existent. They are a financially-driven organisation using customer care/systems protocols that are ineffective. Just try calling their number and see how long you have to wait, and how the line is dropped because 'all our advisors are busy – please call later.' People don't seem to have any idea as to what's happening, and the whole organisation appears confused and incompetent. The number of times I have called and, when eventually managing to speak to a 'real' person, been told that something would occur (such as my line being made clear by 29 January – and remember, this is from the contract ceasing at the end of December), which has never been done!

Kevin sums up his experience of Tiscali in one word. "Dreadful. I will never use this company again and advise others to think carefully before they sign up."

Jody Haskayne at Tiscali replies:

We did experience legacy billing issues early last year as a result of bringing together multiple companies onto a new common billing system. However, that has been operating smoothly for some time. Mr Patch was obviously affected by this and we apologise.

We are prepared to discuss the issue of the free modem with Mr Patch, as it appears that the free

modem offer was not part of the offer when he signed up – if he can clarify when and by whom the offer of the free modem was made, we will look into this.

Regarding cancellation of his account, we apologise for the delay in cancelling it. This was not actioned promptly by Tiscali on request. However, Tiscali did notify BT of cancellation on 15 January, after which it takes 10 working days for BT to release the customer's line, making it available for a new supplier. I understand that Mr Patch's line was free on 29 January.

In terms of customer services, we have recently experienced issues relating to very rapid growth in

WRITE IN

Your opinions count

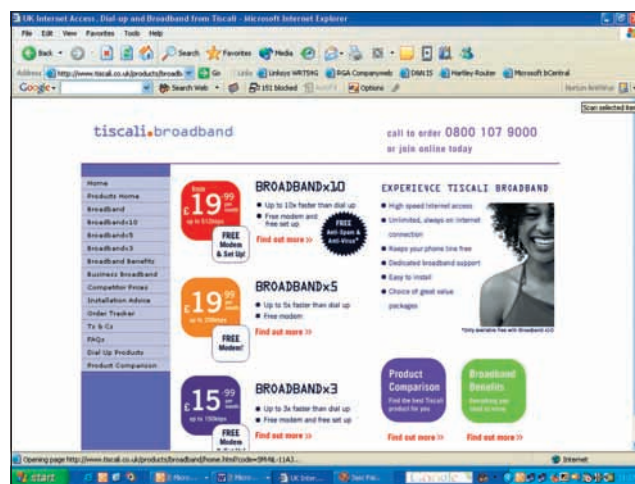
If you have a gripe with a company, a compliment for one, or even a suggestion for future Campaign topics, we want to hear from you. To help us help you, please include all appropriate reference/serial numbers and your full contact details.

✉ campaign@futurenet.co.uk

✉ Fax a printed letter to Campaign – 01225 732295

✉ Send a printed letter to: Campaign, PC Plus, Future Publishing, 30 Monmouth Street, Bath BA1 2BW

FORUM <http://forum.pcplus.co.uk>



Kevin Patch experienced a range of problems with Tiscali, including no 'free' modem, delayed billing followed by demands for payment, and then no reply...

broadband customers, but this is being addressed and we're currently training and significantly increasing the number of agents we have to support customers at our call centre.

Overclockers' silence

And now for a problem that's a little out of the ordinary for the Campaign column, because it doesn't have a happy ending. Phil Perkins runs a small



When we took on the plight of Phil Perkins, who received no replacement ASUS A7N8X motherboard from Overclockers, or refund, we too heard nothing.

"By now some six weeks had elapsed since my first email. What chance do you stand if you can't even get a response from the MD?"

business in High Wycombe so he knows a thing or two about good customer service. Sadly you don't need that experience to know when you're getting really bad service, which is what he got from Overclockers UK. He bought an ASUS A7N8X Deluxe Athlon motherboard, a cutting-edge design choc-full of features and ports. It can use the latest, super-fast PC3200 memory but as modern mobo's have

been known to be a bit 'picky' with fast memory, Phil was careful to enquire from Overclockers which sort of memory would be suitable for that

motherboard. Based on their recommendation, he ordered 1.5GB of RAM as well. Needless to say, it proved to be completely unsuitable and would not work in that motherboard. As mentioned elsewhere in this column, I'm intimately acquainted with the vagaries of the A7N8X Deluxe as I too own one. It's a good mobo but to say it's had a chequered history is an understatement if the complaints on the message boards is anything to go by. The first one I had was DOA. The second one works OK but the onboard audio has so much background noise as to make it unusable. But I digress - back to Phil's complaint. Naturally, he sought to return the memory that didn't work for refund/replacement. But he seemed to hit a brick wall, with the usual story of calls not returned and unsatisfactory email replies. He was fuming. So I took up cudgels on his behalf, emailing Overclockers MD Mark Proudfoot directly with details of Phil's complaint. I got no reply. After a few subsequent attempts, I eventually got a response, but not from Mr Proudfoot.

Overclockers' Customer Care Manager, David Middling: At the time of Mr. Perkins order there was no known problem with Twinmos memory, as soon as the problem became apparent we pulled the product. After discussions with our suppliers we re-instated the product but with a compatibility warning. Unfortunately Mr. Perkins was caught up in the confusion by Twinmos's reluctance to accept they had a problem and responses were delayed due to an exceptional amount of business in the period around Christmas and the New Year. Given the problems above Mr. Perkins would have had a full refund for his Twinmos memory within a month of placing his order. Sadly the refund was created but not authorised and fell into an administrative black hole.

Procedures have since changed. The issuing and processing of returns has been streamlined and the system which allowed Mr. Perkins refund to be delayed has since been replaced. Some online retailers may think nothing of an incompatible product taking two months to resolve. Overclockers UK do not, we accept our failure in this case to meet our own standards and offer our unreserved apology to Mr. Perkins.

Roger adds: Phil was eventually refunded on February 24th. I did ask David Middling about Overclockers' compensating Phil for all the aggro he had been through. He shied away from offering anything concrete but was happy to entertain the possibility of discounts on future orders. Call me cynical but I suspect that's one offer that won't be taken up in a hurry!

Watford Electronics

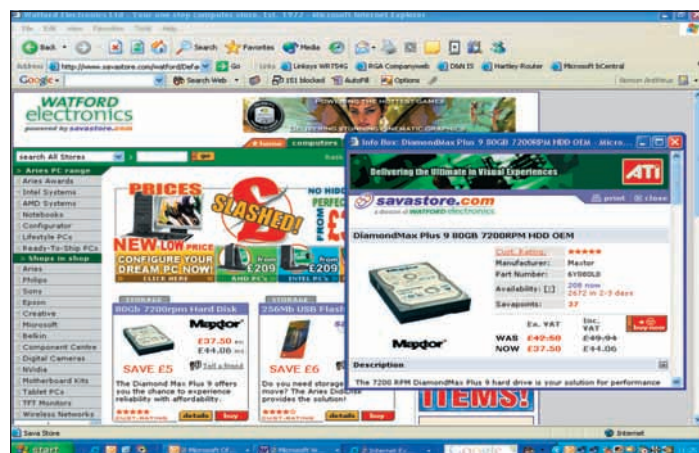
PC Plus Reader Bryn Humphries bought a dud hard drive from Watford Electronics, but had some grief when it

came to returning it for replacement. He had trouble getting any sort of feedback from Watford at all, apart from what he describes as a lame apology from Bushra Saleem, at Watford. He wrote to Campaign with details of the poor deal he was getting.

"I recently purchased an 80GB hard drive from Watford Electronics, whom I've dealt with many times before and had no trouble with, to be fair - but that's when I'm purchasing equipment from them. I only wish that their response with returns was as speedy as their response when I purchase something, then we would all be happy! On this occasion the hard drive proved to be faulty (my test), but having returned the drive to Watford for testing and possible replacement I've not heard anything positive for 21 days - which is long enough.

"I don't know whether you can bring any pressure to bear on Watford to improve their rude excuse for customer service, but if you can I would be most grateful. I work for a leading electrical switchgear manufacturer, which would be out of business in no time if they behaved this way."

Peter Hills at Watford Electronics replies: I have looked into Mr Humphries' return and can see that it took us 23 days to replace his faulty hard drive. Our usual turnaround time for a faulty item is five working days, so obviously Mr Humphries' return did take longer but is well within our stated service level of 28 days. If it would take longer than this we would offer a full refund or alternative. I can see from our system that Mr Humphries' emails have been answered and we have also kept him updated on the progress of the return via automated email. I do not find the apology from Bushra to be lame in any way; it is very clear and apologetic for



Bryn Humphries got a replacement hard drive from Watford Electronics within 23 days - safely within the company's 28-day promise, but rather longer than its usual five days.

the delay. I have replied to the customer myself with an apology and explanation.

Roger adds: Bryn confirmed that he received his drive after 23 days, complete with apology from Peter Hills. However, to use his words: "I'm not really happy with the level of response from Watford during the 23 days. They said they had a high level of returns, probably after Christmas, but that's not a realistic response from a well established company. Anyway, thanks again for your time, and may I say that columns like yours are a good deterrent against poor service, so keep it up."

Going spare with ASUS

Feeble joke alert: How do you make a Maltese cross? Reader Stephen Pulis, who happens to be based on the Mediterranean island, certainly is – he bought an Asus notebook, but had

extreme difficulty in getting a very simple spare part for it. Until he got in touch with the Campaign column, that is.

"I've had serious difficulties getting a tiny spare part for my F7400B laptop from Asus. Basically, part of the minuscule plastic power switch on the laptop broke off (through normal use), but the internal mechanical switch is still intact. I can't locate this spare part – can you help? I am enclosing a copy of the correspondence exchanged between me and Asus with this letter – needless to say, I am completely dissatisfied with their lack of service. I only managed to get replies from the US company – there was nothing but complete silence from the European-based companies. And I know the emails were in fact delivered to the European companies.

The outcome of all this? In my experience, I would say you should never buy laptops, and perhaps even

other hardware, from ASUS – I can't use my laptop properly because of a tiny part that was probably intrinsically weakly designed from the outset. It's ridiculous!

Roger replies: I fired off a quick email to Nathan Brundle, ASUS UK's PR honcho and before long, a spare on/off slider switch was on its way from the ASUS spares dept to Stephen. Terence Cheng of ASUS pointed out that the notebook in question was well outside its warranty. Even so, as a gesture of goodwill, he was prepared to treat it as a special case!

Please do keep those complaints and problems a' coming. I do my best to get results for everyone who writes in, even if there's not space in the column to actually print every single success story. But hey, even the self-styled 'nice man of IT journalism' can't work miracles. **PCP**

GOOD GUYS OF THE MONTH

Advanced customer service

Good Guys awards (well, PC Plus nominations and praise) this issue go to Advanced MP3 Players and Simply Computers



Advanced MP3 Players has managed to get in both the good books of PC Plus and reader Steve Wesemeyer with its fast response and good service.

received the replacement by Friday.

"I was impressed by AMP3's service and prompt response, and would have no qualms recommending them whole-heartedly to my friends."

Roger replies: Actually, Steve, this comes as no great surprise to me, as this outfit has been good to me in the past. Recently, I was in that tricky 'one product short of a group-test' freelancer bind, so in desperation I rang Advanced MP3 Players up out of the blue. Even though they didn't know me from Adam (or indeed Ian), they popped a loan MP3 player in the post to me that very day. Respect!

Simply Computers

And for this month's second Good Guy nomination, IT consultant and PC Plus reader Imran Khan has some rather flattering things to say about Walthamstow's finest, Simply Computers.

Imran writes: "I'm not usually in the habit of writing to computer magazines, but I felt I had to highlight the amazing service I have received from Simply Computers. I had been a fan of Simply in the past, mostly because of their competitive prices and the fact that I've never encountered any problems with them when ordering or having to return faulty goods. When they launched their new website a few weeks ago, I went to check it out. I ordered a Maxtor external 300GB USB hard disk from them, and I was quoted a three-day delivery time. This was on a Wednesday. I was expecting the drive to arrive on Monday or Tuesday of the following week, but amazingly it was delivered the next day! Basically, I had the drive sitting on my desk and connected to my laptop in a little over 24 hours from the time I placed the order. I'm sure you'll agree that this is fantastic service – and a credit to their staff and delivery partner."

Roger replies: Now, at the risk of raining on Imran's parade and airing my dirty linen in public, my experience of Simply, or rather its business arm, Misco, is less flattering. To cut a long story short, I returned a faulty motherboard months ago and I'm still waiting for my refund. Not surprisingly, I'm not a happy bunny. It's a tale that'll be all too familiar to grizzled Campaign column readers, but it just goes to show that bad things happen to us IT journos as well as the great British public! ■

Steve Wesemeyer was prompted to put pen to paper, to nominate a Scottish vendor for a Good Guy nomination. The firm in question is Advanced MP3 Players, which is based in Musselburgh.

Steve writes: "I had been looking for an MP3 player for some time, and finally settled on the latest XClef offering: the HD-800. I ordered it more or less the day it became available; it was dispatched the same day by courier and arrived less than 24 hours later at my home. Pretty impressive!

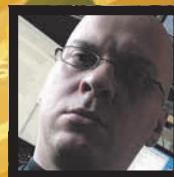
"Having played around with it for two weeks, I noticed that a firmware update had been made available on AMP3's website. As I had noticed the occasional glitch during playback, I thought I'd give the firmware an upgrade to check whether it would cure my problems. Sadly, the upgrade process went horribly wrong, and I was left with what looked like a corrupted FAT32 file system and an expensive paperweight. Not so good...

"Luckily, AMP3 run some forums on their website, monitored by their support people, and shortly after I posted a report there, describing my problems, a member of the support team replied, asking me to fill in a support request form. I actually decided that it would be quicker to call them up, so I spoke to a very helpful and knowledgeable guy (called Josh), who talked me through some basic checks and then concluded that it probably was a hardware fault. He said I would need to send it back for a replacement. I posted it off the same day, which happened to be a Monday, and



Online auction survival guide

Illustration: Magictorch



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Davey Winder is an award-winning technology journalist and a founder member of the Internet Society of England

Sites like eBay are a minefield of bidding, sniping, trial and error. **Davey Winder** reveals how you can make – and save – money

Christie's auction house dates right back to 1766, and if you thought that was impressive, Sotheby's can trace its history even further back, to 1744. However, we're not bowled over by either of these impressive facts. What makes us sit up and take notice is an auction whippersnapper that dates back to a less-than-stunning 1995 because, in less than 10 years, it has become the biggest auction business in the world.

With 42million registered users, and 10million items up for sale at any given time, eBay (www.ebay.com and www.ebay.co.uk) has single-handedly made auctions a fashionable item amongst the younger generation. Indeed, with few exceptions (the full list of which can be found on eBay itself, and includes the obvious items such as firearms and drugs), you can sell just about anything at an online auction. Think of them as being simultaneously the biggest car boot sale on the planet and the biggest antiques store, pound shop and market stall – the analogies go on.

Beyond size, popularity and 'cool' factor, there are some important differences between online auctions and their conventional counterparts. If you want to avoid losing money as a buyer and maximise your profit as a seller, then it's vital that you understand these differences, and learn to exploit the leverage that comes with real insider trading knowledge. It's this knowledge that we



The HammerSnipe PowerTool. Enter the auction item number, then click on the Verify Item button to continue.

aim to impart within this survival guide feature, and although we'll focus on eBay, much of the same savvy can be applied just as successfully elsewhere once you allow for the nuances of each system.

Perhaps the most important aspect of eBay to grasp is the concept of community feedback, upon which the whole system hinges. When you buy something you have the opportunity to leave a feedback rating (positive,



neutral or negative), along with a brief comment about the seller, and vice-versa. Every time someone new adds a positive feedback comment you get another feedback point, the system being person- rather than transaction-based to prevent easy rigging. Hit 10 points and your username gets flagged by a yellow star icon. As you hit targets for feedback points the star changes colour, with the ultimate rating being a red shooting star for 100,000-plus positive ratings. Of course, like any system it can be abused, and the most common practice is malicious negatives being handed out by rude or awkward folk. Because eBay won't remove negative ratings, the best thing is to try and avoid them by being polite in all your dealings – even when faced with the most Victor Meldrew-like of characters.

Caveat emptor

Before you start bidding on anything, do a little research. In fact, do a lot. The sale end time is clearly shown, so avoid last-minute impulse bids and go for those items where you have a day or two to do your homework. Search on eBay for similar items that have been sold recently to gauge the current interest and market value. Check the delivery charges carefully, use the 'mail to seller' feature to ask relevant and probing questions, and check the seller's feedback ratings. Once you're sure that the goods, the price and the seller are kosher you can bid – although you don't have to.

If the item has a Buy It Now (BIN) price check, use this to see if it is actually a bargain and, if it is, snap it up. Newbie sellers often undervalue the BIN price, which means you can exploit their naivety. If the BIN price is

too high for you, but you want to stop someone with more bling than brains from buying it, make a silly low bid that will immediately expire the BIN option. Don't waste your time sitting up until 2am on a Sunday morning just so you can make a winning bid in the final minute of an auction – someone would only outbid you in the final few seconds anyway. Why? Three reasons: the eBay proxy bidding system means that bids up to your maximum limit are only made when needed to secure the item, so a frenzy of bidding can take place at the end of an auction; bidders in the US won't be in bed like we will; and finally, savvy bidders will be letting specially-designed software do their bidding for them in the last few seconds, preventing anyone else from beating them – sniping, as it's known.

There's a lot of sniping software to choose from, but our favourite program has to be the HammerSnipe PowerTool (www.hammertap.com). This is very easy to use, as you can see from the screenshots, with your bid held in a sniping queue on a remote server at the appropriately-named AuctionStealer site, ready to be placed as the auction draws to a close. To release the real power you need to subscribe using one of the many options to suit your budget (this brings sniping into the last three seconds of an auction), as well as unlimited bidding on as many items as you want.

If you don't want to get into the intricacies, try using the eBay proxy system to set your maximum bid price to a non-rounded figure (£11.19 instead of £10.99, for example) to force the sniping software into making a second bid attempt. If the first sniper bid was with three seconds to run, it won't have time to make the second one and you'll win. Of course, it depends on you getting the price just right and, as we all know, that ain't easy.

Another good reason for using 'odd' bid amounts



Current Auctions

To add a new item, scroll down to the "Add a New Item" section below. To edit a current auction item, click on the "Edit Item" link. If you would like to view your past auctions, click on the "View Past Auctions" link below.

SUCCESS: Your item has been saved and queued to be sniped.

PRIORITY SERVICE: To have your item's current price checked every hour instead of every 6 hours, sign up for the Priority Service. (5/6)

[View Past Auctions](#) [Add a New Item](#)

General Auction Items (Un grouped)

Cancel	Auction Item	Status
☐	JAGUAR XJ8 ALPINE 6 DISC CD CARTRIDGE (2474013251) Seller Name: nilrs Price: 8.00 / 10.38 GBP Finish Date: 04/21/04 18:29:40 CT Time Left: 04 days 09 hours + View Item Edit Bid	This item has been queued to be sniped. Purchase Priority Service
☐	JAGUAR XJ V8 SERIES PRESTIGE BROCHURE 1998 (2238879502) Seller Name: motorworld-ikrobertson Price: 10.00 / 21.84 GBP Finish Date: 04/25/04 15:32:11 CT Time Left: 08 days 06 hours + View Item Edit Bid	This item has been queued to be sniped. Purchase Priority Service

[Cancel Selected](#)

Add a New Item

In order to add an item please select the auction site from the dropdown, enter the item number and click the "Verify Item" button. NOTE: If the auction site is not listed, then we do not support it at this time.

Auction Site:

Auction Number:

[Verify Item](#)

You can always edit your bid amounts, or cancel the sniping if you wish, from HammerSnipe's main auction screen.

There are multiple warnings that may be listed below. Please read ALL the following messages before you continue.

1. PRIORITY SERVICE: You are currently NOT signed up for the Priority Service. To take advantage of 3 second sniping and Bid Groups you will have to sign up for the Priority Service.

Auction Information

Item Number:	2474013251
Title:	JAGUAR XJ8 ALPINE 6 DISC CD CARTRIDGE
Current Price:	8.00 GBP
Quantity Available:	1
End Date:	04/21/2004 18:29:40 CT
Seller Name:	nilrs

Snipe Information

Your Maximum Bid:	10.38
Use the auction's currency	
Quantity to Purchase:	1
Buffer Time:	10 to 20 Seconds before the end of the auction.

HINT: To be able to adjust your buffer time (3, 5, 7, 10 or 15 seconds) and to take advantage of Bid Groups you will have to sign up for the Priority Service.

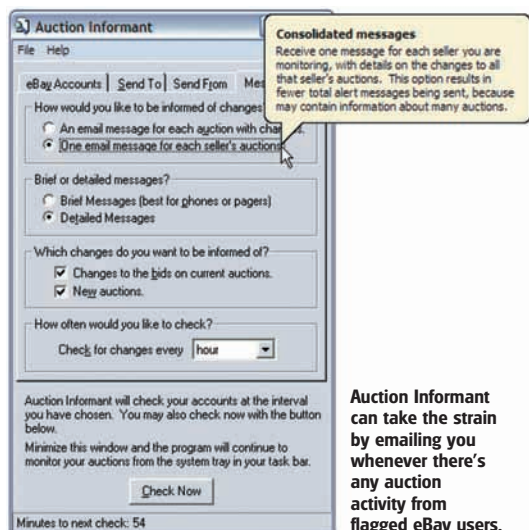
A Bid Group allows multiple items to be placed into a single group and used to buy one item. When one of the items in the group wins, the rest of the items in that group are canceled automatically.

[Save Item](#)

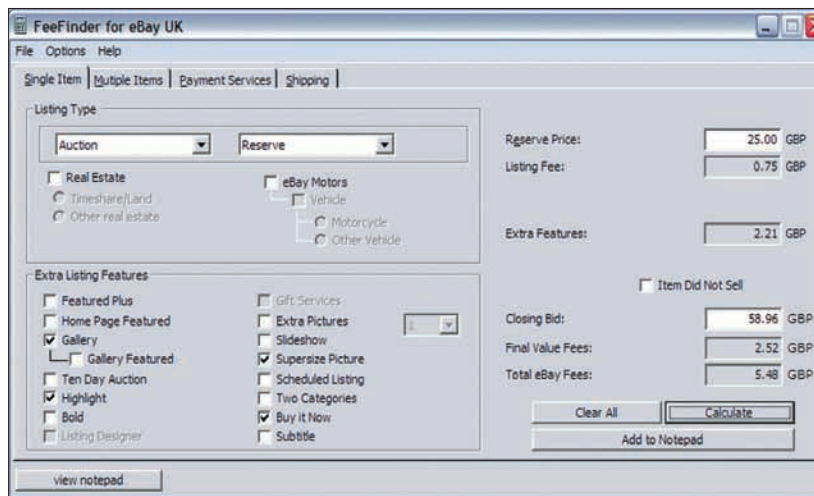
In HammerSnipe, once you've checked that the item details are correct enter your maximum bid.

CHECK WITH GOOGLE

Auctions are not always the cheapest route to take, and before you commit yourself to any item by entering the bidding you should try a quick Google search. Seriously, with the number of shop comparison sites out there, this is one time that you might not mind the search results being dominated by Kelkoo or DealTime hits. Don't forget that a Google search will also throw up any private sellers out there, so try a Google Groups search by hitting the relevant tab and you'll get to scour Usenet newsgroups as well.



Auction Informant can take the strain by emailing you whenever there's any auction activity from flagged eBay users.



FeeFinder brings a welcome clarity to the otherwise complex world of eBay sales charges.

is that there are set bid increments. If the bid increment is 50p more, setting your limit to £10.05 would force a bidder raising from £9 to make a £10.50 bid instead of a £10 one, which could be just enough to put them off bidding any higher – after all, they don't know how high you've set the ceiling.

Sell yourself

Most of the insider tips that we can offer you here are grounded in common sense, yet a surprising number of people think that saving a few pennies by not uploading a photograph of the goods for sale will make no difference to the outcome. Ding! Wrong! Just as wrong, in fact, as those people who waste their pennies by uploading an out-of-focus, badly-lit photo of something vaguely resembling the item. The same logic applies to the description you provide: if it lacks detail, or is full of

“Even the most gullible potential buyer isn't going to jump at the chance to buy a ‘very rare set of spark plugs.’”

inconsequential nonsense, your chances of a sale are slim indeed; if it makes a point of being honest about any faults, as well as highlighting the good points, then your chances will be increased.

Of course, a little marketing psychology doesn't hurt, and in the land of the online auction, sadly, this seems to mean that prefacing the item you intend to sell with ‘very rare’ usually does the trick, assuming that it's within context. That said, while this is perfectly fine for a collectable item, even the most gullible potential buyer isn't going to jump at the chance to buy a ‘very rare set of spark plugs’, no matter how you dress them up. Selecting a category and sub-category is also vital, or rather selecting the right ones. Search for similar items if in doubt, and see where they've been successfully sold. Although it will cost a little more, adding a second category for your item can be worthwhile (if, of course

Specialist auctions

Alongside eBay, where else should you head for online bargains?

While nobody can deny that eBay rules the online auction roost, there are plenty of bargains to be had elsewhere if you look around – especially if you're after a particular genre of goods or services. Take for example the Comet Clearance Auction (www.clearance-comet.co.uk), where you enter your postcode to reveal everything your local store has to offer, from washing machines to home cinema systems and computing items. The items are ex-display models, customer returns and those with cosmetic damage but, unlike many auctions, Comet offers a one-year guarantee and full refunds within 28 days for returned faulty goods.

If you want holidays, then the Lastminute Auction (www.auctions.lastminute.com) is worth consideration. Check the ‘closing’ and ‘one hour’ links for some real drop-of-a-hat travel bargains. Already well known to savvy PC Plus readers with a keen eye for cheap hardware, Morgan Computers specialises in end-of-line computer gear. If you don't need the very latest spec (and the truth is, few of us really do need it), then you'll be able to find some extraordinary bargains at its auction site (www.morgan-auctions.co.uk). These include digital cameras and notebooks – all without reserve. But be warned that bids don't include VAT, so you have to take that into

account when bidding.

Perhaps the most unusual and surprising of all the auctions out there are the police auctions. Property found or

impounded by the police can, after a period of time and in certain cases, be sold at auction at the discretion of the Chief Constable of the force concerned.

For years these auctions remained something of a secret amongst those who were in the know, until the Internet auction explosion happened and we could all be in the know. They're still something of a hidden treasure, though, so we're happy to reveal that if you head off to Bumblebee Auctions (www.bumblebeeauctions.co.uk) you'll find the UK Police Property Disposal Auction site. You do need to keep checking if you want to pick up some of the really good bargains, but there are plenty to be had.



Bargain electrical goods on your doorstep, with a money-back guarantee? That's Comet auction common sense!



Police property auctions provide a legal way of profiting from crime. Someone else's, of course.

this is appropriate), as this will put it before a wider potential audience.

Don't type your description into the editing box online on-the-fly. Instead, take your time – work offline in a text editor with a spellcheck, and do the best job you can. Not only does this make for a better description, it also means you have a copy of exactly what you cut and pasted into the dialog box before pressing the Submit key. Remember that adjectives are your friend, especially when it comes to the title of your lot, and as the successful marketing psychology of eBay would seem to suggest, this means terms such as 'rare' or 'mint', or better still 'very rare' and 'exceptional condition'. But avoid using silly spellings, SMS-style jargon or ASCII embellishments like '@@@ Bargain!!! @@@' as these will make it harder for a buyer using the auction search tools to find your listing in the first place.

The really savvy sellers know that you don't have to stick to plain text in the item description section; in fact, eBay supports basic HTML formatting, so you might as well exploit it. Indeed, if you are going to be selling a lot of goods, why not take a little time out to knock up a simple yet effective HTML template to use for all your sales? Add a little colour, some creative use of inline images and text formatting, and your item will stand out from the herd.

Some sales essentials are easily overlooked, such as the importance of calculating delivery charges accurately, which means weighing the item in its box and any wrapping to get a precise figure – and using the calculators available at Royal Mail (www.royalmail.com) or Parcel Flash (www.parcelflash.com) or whichever services are used for your country of residence. If you don't want to post your item overseas, then don't tick the 'make available to international buyers' checkbox, and for good measure include something in the description about delivery to UK addresses only, if that's where you reside. Don't forget to mention that international buyers will have to pay the cost of exchanging currencies, cashing dollar cheques or accepting PayPal transactions, otherwise your profit margins could be seriously compromised. Similarly, ensure that monies have cleared into your account before sending any goods out.

Finally, it pays to think carefully about the end date of your auction. Even though sniping software has lessened the impact of weekends, late nights, early mornings, sporting events and so on, you might as well go for the biggest potential audience by ensuring that your auction ends at the weekend, in the afternoon.

Going, going, con

Don't get stung by the many auction scams out there. While someone may appear to be selling a 42-inch plasma TV for £150, a closer inspection of the description reveals that they're actually selling a link to a web page about cheap sets. Harder to spot are shill bidders who use associates or multiple accounts to drive up the bidding. Tell-tale signs are lots of bidding activity from users with unlikely names who have no feedback, and items suddenly withdrawn when nobody else plays ball.

Don't be tempted to buy from sellers who email you with a similar item to one you lost out on; if you enter into a transaction with them you will have none of the

"Don't be fooled by fraudsters who say they need your username and password, oh, and your credit card details."



Unfortunately, eBay suffers more than most from being the target of online fraudsters. Don't be a victim, be informed and be on your guard.

protection that eBay offers. And certainly don't be fooled by fraudsters who are after your account details, especially ones who say they are from eBay and that they need your username and password, oh, and your credit card details, for 'security reasons'. No matter how convincing the mail, or the website they link to, it's a con. Remember that eBay will NEVER ask for such

information by email. See pages.ebay.co.uk/education/spooftutorial for the eBay Spoof Emails Tutorial.

Be on the alert for fake escrow scams, too. An escrow service holds payment from

the buyer until the goods are received, and then releases the funds to the seller. Fake escrow services, often blatant copies of the genuine www.escrow.com, are used by conmen offering 'too good to be true' prices and looking for something to add validity to the sale. They might

Consumer protection

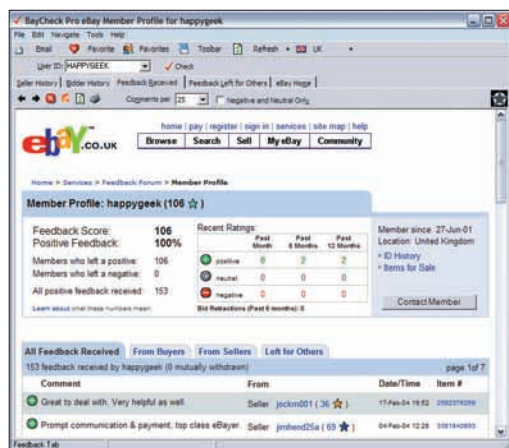
Are your auction payments safe when you buy online?

With a few notable exceptions, when you buy goods at an online auction you leave behind the land of Distance Selling Regulations, Sales of Goods Act, Sale and Supply of Goods to Consumers Regulations, Mail Order Protection Scheme and the whole merchantable quality thing. Buying from an individual seller by auction is no different to buying from one using the classified ads in the local newspaper, or sticking a postcard up in the supermarket.

If you believe in 12-month warranties, 28-day refunds and all the other consumer protections you'll find on the high street, then your introduction to auctions may come as a shock – the exception being when items are auctioned by a company, as consumer law still applies in these cases. This is why dealers such as Comet (see 'Specialist auctions' opposite) make it clear that you get a full warranty, and can bring goods back for refund if faulty.

In order to try and allay consumer fears as much as possible, eBay and other

online auction sites provide their own protection schemes to ensure as few problems as possible. However, you would do well to check these out in detail before entering into any binding agreement by way of making bids or offering goods for sale. Also, bear in mind that when you use an online payment system such as PayPal, you might not be as protected as you think. When you pay for goods by credit card you can always drop the onus onto the seller if things go sour; the credit card company will refund you and put a 'chargeback' on the seller, which means they have to pay the money back to the card company, plus a bit more for their trouble. Even though you pay with a credit card using PayPal, you're not paying the seller of the goods using the card; you're paying for the PayPal service. So if things go wrong you can't complain to the card issuer; the service came from PayPal, which took your money and passed it onto the seller.



Community feedback is at the heart of eBay, and BayCheck Pro makes checking user integrity a one-click process.

cached, and the audit trail doesn't stop there, because the recipient also needs a bank account to cash it into.

Tools of the trade

The most successful online auction-goers are those who exploit the technology around them, and if you're serious about the business you need serious tools. This is where HammerTap (www.hammertap.com) – a company specialising in online auction software – comes in. We've already mentioned some of its applications, but there's a final triumvirate that you simply mustn't overlook: Auction Informant, BayCheck Pro and FeeFinder.

Auction Informant enables you to automatically check what items are being offered by specific eBay members. Just enter the username of the person in question and you can have emails sent to you whenever they add a new item, or a single mail containing a digest of all new items each day. It's also possible to set the time between checks, as well as deciding if you would like to be

"Nobody can guarantee that you'll pick up bargains any more than they can turn you into David Dickinson."

informed of new items only or changes in bidding on existing items as well.

BayCheck Pro brings all the community feedback features of eBay into a single interface to enable you to quickly check on any buyer or seller. Not only can you see their feedback ratings, but you can filter these to show only positive or negative comments, for example. It also makes emailing eBay members a one-click process, and a whole lot less fuss than taking the eBay form-based mailer route.

Finally, FeeFinder will calculate the real cost of selling items on eBay, taking into account commission fees and all the little-value added extras a seller can choose to try and make their items stand out from the crowd – things such as supersizing pictures, or featured item status, for example. It can also add in the cost of using payment services such as PayPal by calculating the fees payable, and there's even a multi-national delivery charge calculator.

At the end of the day, nobody can guarantee that you're going to pick up bargains or make a killing at the online auction houses, any more than they can turn you into David Dickinson in the real world (but would you really want that...). The devil is in the detail. But remember to pay close attention to the basics, throw in a little insider knowledge and you'll stand more chance than most of ending up with a real entrepreneurial style that could lead you to a right bobby dazzler... **PCP**

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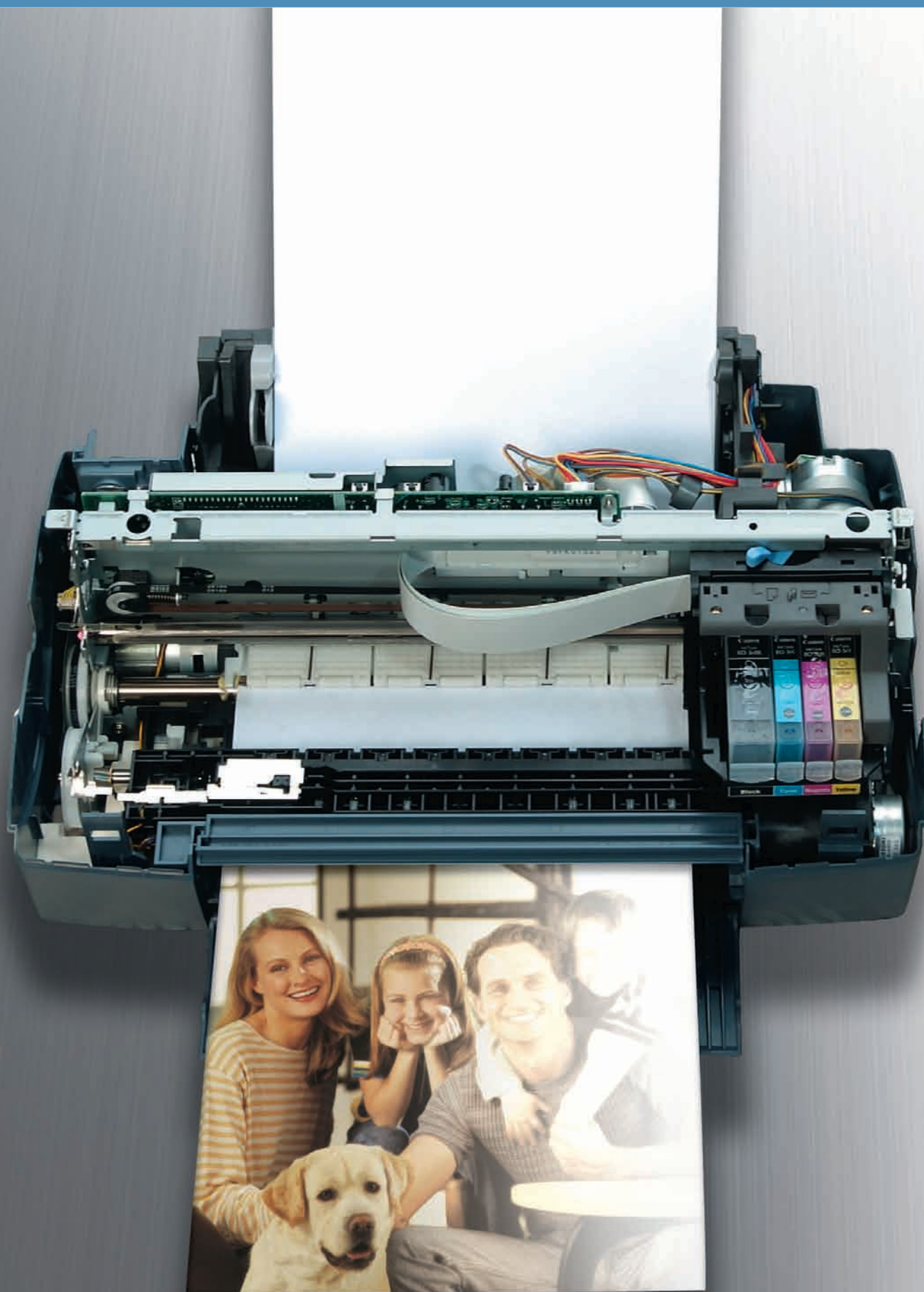
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Gary Marshall
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Gary is a regular contributor to PC Plus, and he explored the world of bioinformatics and DNA in issue 203

SPECIAL INVESTIGATION

Printing exposed

Choosing the wrong inkjet could cost you thousands of pounds, so is printer ink a licence to print money? **Gary Marshall** investigates

The price of inkjet printers has plummeted in recent years, and if you buy even a cheap PC, you'll often get a state-of-the-art inkjet for free. However, as with mobile phones and razor blades, it's not the hardware that hurts: it's the cost of using it.

For printer manufacturers, the cost of consumables is the story that won't go away. In 2002, the Office of Fair Trading investigated allegations that printer ink was a rip-off, and concluded that manufacturers needed to provide more information about the cost and longevity of their replacement cartridges. In 2003, Which? Magazine reported that some inks were more expensive than the very best vintage champagne, and in early 2004, the story was resurrected all over again.

This time the story came from a specialist magazine, whose editor warned that, "Consumers are still at serious risk of being ripped off." The magazine calculated the running costs of several inkjet printers and concluded that one particular model, a £35 Lexmark inkjet, would cost a staggering £1,775 over an 18-month period.

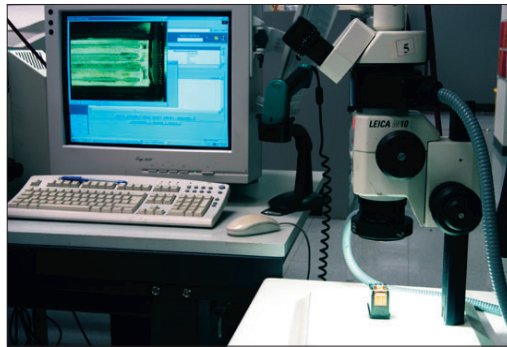
Counting the cost

There's no doubt that the Lexmark in question – the z605 photo printer – is expensive to run: Lexmark suggests that you can expect 205 pages from a £15 black cartridge or 140 pages from a colour cartridge, which also costs £15. However, while £1,775 makes a good headline, the z605 is marketed as a low-volume printer for home users. To spend that much money on ink, you'd need to replace both ink cartridges 57 times – that's a replacement black cartridge and a replacement colour

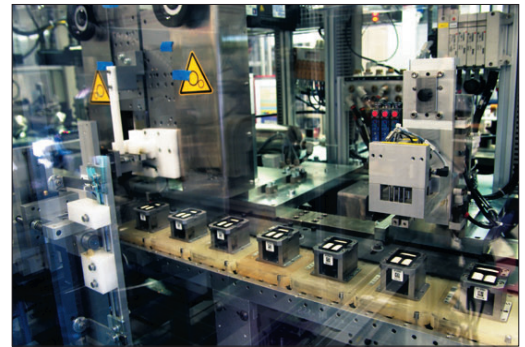
Epson's DuraBrite ink is designed to deliver vivid, fade-resistant colours with pigment-based inks. Many third-party cartridges use dye-based inks, which have very different properties.

cartridge every nine and a half days, with a print volume of more than 1,000 pages per month.

If you opt for a bottom-of-the-range inkjet with low-capacity ink cartridges to handle that sort of volume, you need to have your head examined. The Lexmark cartridges work out at 6p per page for black ink and 11p per page for colour; more expensive inkjet printers offer a much lower cost per page and, as a result, they're far more cost-effective in the long term. For example, an HP 45 black cartridge delivers 830 pages for £25, or 3p per print, and a high-capacity HP 78 colour cartridge will churn out 970 pages for £43, or 4p per print. ➔



Ink cartridges go through a barrage of rigorous tests during their creation to ensure that they'll work in all conditions and that each individual nozzle will perform correctly in use.



Cartridges like these HP ones are filled with foam, then welded shut. To use third-party refills, you need to break the weld, and if you don't refill the cartridge immediately, it may dry out.

With those cartridges, the prints that would cost £1,775 on the Lexmark would cost around £650, a saving of almost two thirds. Over a three-year period, you would save a staggering £1,575 by opting for a printer that used higher-capacity ink cartridges instead of using a low-volume printer for high-volume work.

Even Lexmark agrees. In a statement, the company said: "We estimate that people will purchase around two cartridges per year. Customers who want to print a large amount should quite rightly look beyond the ticket price."

It's not as if the z605 is the only printer the firm sells. After all, if you plump for a model that takes its high-

yield black cartridges, you'll get 1,100 pages from a £29 black cartridge at a cost of just over 2.5p per page. The printers themselves are more expensive at around £140, but the lower cost per page means that the printer will quickly pay for itself.

Other expenses

Even high-capacity cartridges are pricey, and decent colour printing also requires specialist paper that can make a big difference to the cost per page. If you want fade-free photographs, the paper is more expensive still. In some cases, the printer firms use technological means to prevent us from using cheaper, third-party ink cartridges. Many cartridges now contain microchips, and if the cartridge doesn't have the appropriate chip then the printer will refuse to operate.

Even if you use the correct cartridge, you could still encounter problems, as PC Plus reader Terry Foxon discovered when his Epson Stylus Photo 830u became hungry. "While I am perfectly happy with the print quality, I am far from happy with the way in which I have to exchange a cartridge which, according to the printer, has expired, but on an internal inspection was found to be only almost out of one colour," he says.

"The remaining four [colours] still contained almost a third of their full capacity. At £20 per cartridge, this turns into an extremely expensive way of printing, and by my calculations there would be very little difference in cost if I were to use a professional high-street printer."

Cartridges can also be somewhat pessimistic. Our HP PSC 750 is warning us that its black ink cartridge is very low and needs to be replaced. This is a warning that we'd take more seriously if we hadn't been ignoring it for the last two months while our pages continued – and still continue – to print perfectly.

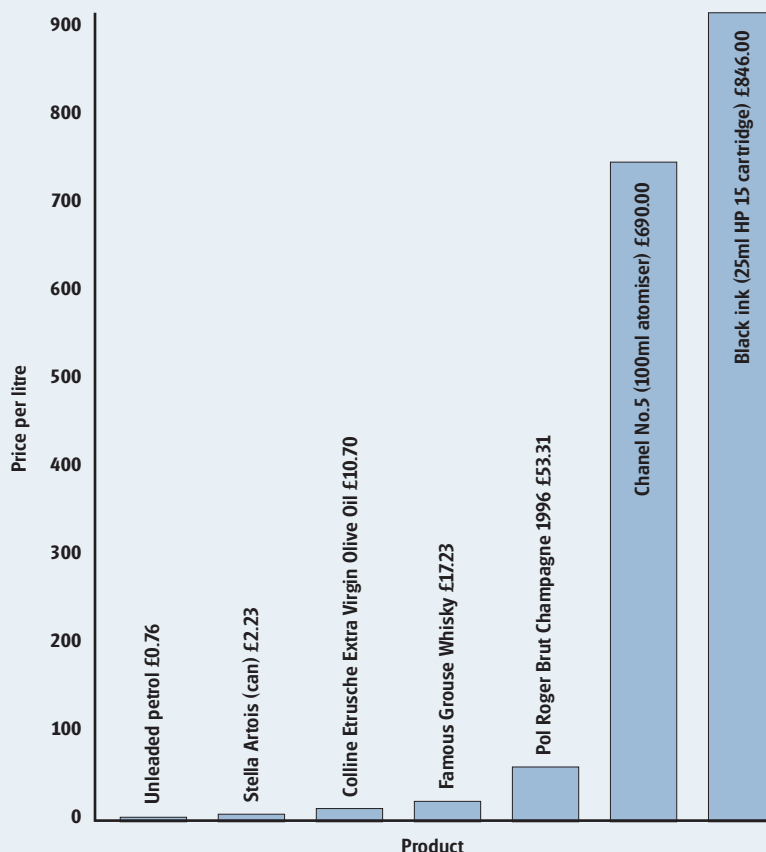
Our HP doesn't stop working when the low ink warning appears, but other manufacturers' machines are less forgiving. In 2003, Which? Magazine found that some Epson printers shut down rather quickly. In one case, disabling the ink-level sensor resulted in an increase of 38 per cent in the number of pages from a single cartridge.

Epson argues that the ink sensor protects the printer from damage, which is one of the reasons why printer firms also suggest you should avoid cheap, third-party cartridges or refills and always use the appropriate paper. Inkjets are incredibly complex, manufacturers say, and you can't expect perfect prints from a cheap clone cartridge and a ream of A4 from Tesco. You're paying for quality, reliability and durability, not to mention levels of testing that even NASA might balk at. And, to be fair, they've got a point.

Most of us know the basic principles of inkjet printing: the print head has a bunch of nozzles that fire ink droplets at the paper, and different inks are mixed

Liquid gold

Ink is expensive, but how does it compare to other costly concoctions?



Sources: AA, Tesco.com, Oddbins.com, Boots.com, Dabs.com. April 2004.

together by the print head to create the desired colour. However, the process is a lot more complex than that.

As an example, an HP ink cartridge puts ink on the page by creating 36,000 vapour blasts per second, heating ink to 300 degrees Celcius and ejecting it through 500 nozzles that are one third of the diameter of a single human hair. If the ink contains any impurities, those tiny nozzles can become clogged, so the manufacturer runs a battery of tests to make sure that doesn't happen.

Testing, testing

Each batch of HP cartridges undergoes more than 100 different tests, with 20,000 cartridges tested each month. They're elevated to the equivalent of 33,000 feet, dropped onto concrete from a height of two metres, exposed to 60 degrees C and 100 per cent humidity, and cooled to zero degrees C. In addition, every single nozzle on every single cartridge is test-fired during the production process.

"Our cartridges are technical products that take up to four years to evolve before they are put through the manufacturing process," explains Jamie Gryce, supplies sales director for HP UK & Ireland. "From the very early development stages, they are tested for quality, superiority and ease of use, and these tests need to be continued throughout the manufacturing process to ensure that all cartridges reach our customers in pristine condition."

And that's just the cartridges. A typical ink formulation requires 50,000 man hours of development time, with chemists and engineers adjusting the mix to ensure that it doesn't clog the nozzles but dries quickly on paper, that it saturates the paper but doesn't make it curl, and that it delivers bright colours that are resistant to fading when exposed to light. According to Wilhelm Imaging Research (www.wilhelm-research.com), if you use the manufacturers' recommended ink (and its premium photo paper), you can expect your colour prints to last for 73 years before showing any signs of fading, while your black and white prints should remain fade-free for 115 years.

Epson does things slightly differently, as head of consumer business Richard Baylis confirms. "We have fixed print heads, and of course we test all of them before they go out with the product. All of the cartridges are also tested and the failure rate is almost nil," he says. "We're talking about placing 30,000 dots per second of six different colours, so you need incredibly fine tolerances. To us, a failure is if one of the nozzles fails to fire, or if

one of the colours isn't quite right, or if the dot placement is incorrect. These are things we can guarantee won't happen. We position ourselves as having the best photo output in the market, so it's absolutely paramount to us that we are able to guarantee that the customer will always get a photograph that looks like a photograph, and get true colours from the digital input they choose, whether that's a PC, a memory card, a scanner or a digital camera."

Of course, that guarantee only applies to Epson's own papers and inks. "What we have to ensure is that over thousands of prints, the quality is delivered and the customers' expectations are met," says Ian Vallance, Epson's consumables manager.

"The only way we can do that is by engineering, developing, researching and putting our R&D into the consumables that work as part of that system. The only way we can guarantee quality and guarantee that customers will get what they want is through the Epson original supply."

While printer firms don't say that you can't use third-party cartridges and won't criticise any manufacturers of those products, they do point out that re-manufactured units and refills may not deliver the same quality or reliability as brand new, official cartridges.

"By their very nature, reused cartridges cannot provide the same level of consistently high output, quality and manageability as an original because the technology within a cartridge degrades with each consecutive use," says Jamie Gryce. "So, while price is important, HP advises its customers to consider their printing needs, such as quality, reliability and ease of use, in addition to page yield."

Ian Vallance agrees. "If you take our DuraBrite product, it uses pigmented inks to deliver bright colours and longevity, but a lot of the 'compatible' products use a dye-based ink," he says. "That has a completely different property on plain paper in terms of its longevity and quality. Only the genuine product will have pigmented ink that lasts on plain paper and that is also waterproof."

Like HP, Epson used Wilhelm Research to assess the longevity of its output compared to unofficial, 'compatible' products.

"We were surprised by the level of difference," says Richard Baylis. "If the consumer chooses to use either non-genuine ink or non-genuine paper, but especially if they use both non-genuine ink and non-genuine paper, the difference in quality and longevity is enormous – to the tune of 50 or 75 years to one year [in favour of the Epson products]. It was pretty remarkable."

"It's more than just 'if it says Epson on the cartridge it must be the same' – that isn't the case," explains Ian Vallance. "You get what you pay for."

While you can inject ink into used cartridges, this can be rather messy and unpredictable.



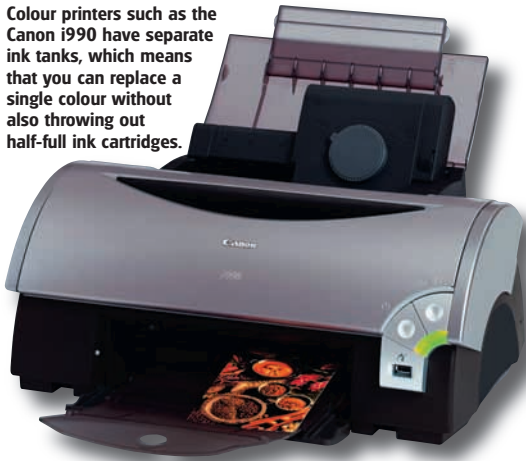
TOP-UP TIME?

Refill kits such as the ones offered online by JR Inkjet (www.jrinkjet.co.uk) enable you to refill a typical cartridge around 10 times before it has to be disposed of, and can even be used in cartridges containing ink-sensing microchips if you buy a gadget called a 'zap-it resetter'. Such refills are frowned upon by printer manufacturers, and in our experience, refilling can be a messy and unpredictable process. It's also worth pointing out that most refill manufacturers say that their inks may fade over time, so if you're printing photos you want to keep for years, sticking with approved, new cartridges is the safest option.

HP tests more than 20,000 cartridges per month. This involves 100 different tests, including heat, cold, humidity and altitude. In addition, every nozzle on every cartridge is test fired.



Colour printers such as the Canon i990 have separate ink tanks, which means that you can replace a single colour without also throwing out half-full ink cartridges.



Buy now, pay later?

We're all familiar with the way in which mobile phones and razor blades are sold: when you buy a mobile, most of the purchase price is subsidised by the manufacturer and recouped over the course of your contract, which is why you can pick up a new Nokia for nothing on certain tariffs, but if you want one without a SIM card, you'll pay several hundred pounds. Similarly, when you buy a Mach 3 razor, it's being sold at a loss – the manufacturer gets its money back when you've bought several packs of replacement blades. These days, printers are sold in exactly the same way.

"HP has publicly announced its need to make 15 per cent profit for its printer business and this is achieved through hardware and consumables sales," says Gryce.

If your printer costs £50, you can guarantee that the manufacturer isn't making money on the sale. That 15 per cent profit has to come from somewhere, and in most cases it's recouped from sales of ink cartridges. Because of this, the retail price of a printer isn't the key cost: it's not what you pay now, but what you'll pay over a year, two years or three years that's important.

The more printing you do, the more important it is to choose your printer carefully. If all you need is a printer for home use, running off the odd letter or a few digital camera snaps, then a cheap inkjet will be fine. However, you should check the specifications carefully and use sites such as Dabs.com to compare cartridge

prices and capacity for comparable models. Pay particularly close attention to the cartridge yield, which tells you how many pages you can expect to print from a single cartridge.

If you intend to print in colour, it's a good idea to look at the type of colour cartridge that your potential purchase requires. Cheaper inkjets tend to use a single colour cartridge, so if one colour runs out before the others, you'll need to replace the entire unit. A printer with separate cartridges for each colour is likely to be less wasteful and more cost-effective over the long term, particularly for higher-volume printing. Many of Canon's colour printers use single-ink cartridges. For example, the i990 printer has seven separate ink tanks, so when one colour runs out, you can replace it without also replacing the other colour cartridges.

For high-volume work, business printers typically use higher-capacity cartridges with a lower cost per page, and they'll pay for themselves several times over if you're a high-volume user. As we discovered earlier, the cost per page for the Lexmark cartridge was 6p; with an HP 45 cartridge, the figure dropped to 3p per page.

For really high-volume printing, you might be better off with a laser printer. A typical £75 laser toner cartridge delivers 5,000 pages (at five per cent coverage) at a cost of just 1.5p per page. Once again, the printer is likely to cost slightly more to purchase, but the total cost of ownership will be considerably lower, especially in an office environment where printers tend to be shared by several employees.

Care and feeding

You can also cut the cost of printing once you've purchased a printer. Most inkjets offer a range of different driver settings, including an ink-saving, economy or draft mode that cuts the print quality to conserve ink. If you're running off internal documents or proofing work, draft quality is perfectly acceptable. Similarly, there's no need to shell out on expensive inkjet paper when cheap A4 will work just as well, or to use glossy photo paper for a quick preview of a digital ➔

TOTAL RECOIL

As every IT manager knows, headline prices rarely tell the whole story. In business, it's the total cost of ownership (TCO) that counts. We've chosen seven printers – five inkjets and two lasers – at price points from £35 to more than £1,000, and have calculated the TCO for each model over a three-year period. In each case we've looked at black ink only. Due to the difference between inkjets (some have single-colour cartridges while others use multiple cartridges) and colour lasers, any such comparison would be meaningless. Rather than factoring in paper costs, we've assumed that the price of paper will be the same for each printer, and we've based our figures on official replacement cartridges rather than third-party consumables.

As you can see from the table below, a cheap and cheerful inkjet is fine for low-volume printing, and if you're only chucking out 100 pages per month, any cheap inkjet will have a three-year TCO of less than £300. However, even at such low volumes, it's worth considering a machine that uses high-capacity cartridges: with a page yield of 1,400 pages per cartridge, the HP Business Inkjet is the cheapest of our three inkjets, no matter how many pages you print. Of course, it's at high volumes that the differences become more dramatic and without fail, the cheapest printers to buy will end up costing you the most to run.

Printing prices compared

We tested seven leading printers to find out how much they'll cost you over time

Printer	Cartridge cost	Cartridge yield	Price per page	Hardware price	Total Cost of Ownership over three years			
					100 pages per month	250 pages per month	500 pages per month	1,000 pages per month
Lexmark x605	£12.68	205	£0.06	£34.99	£257.66	£591.67	£1,148.36	£ 2,261.72
Epson Stylus CX5400	£18.80	400	£0.05	£116.32	£285.52	£539.32	£962.32	£1,808.32
Canon i865	£8.22	280	£0.03	£139.82	£245.51	£404.03	£668.25	£1,196.68
Lexmark x85	£29.37	1100	£0.03	£141.00	£237.12	£381.30	£621.60	£1,102.20
HP Business Inkjet 1100	£28.20	1400	£0.02	£141.00	£213.51	£322.29	£503.57	£866.14
HP LaserJet 1300	£64.62	4000	£0.02	£245.57	£303.73	£390.97	£536.36	£827.15
HP LaserJet 5100	£116.32	10000	£0.01	£1,091.57	£1,133.45	£1,196.26	£1,300.95	£1,510.32

HP 1100 figures based on high-capacity cartridge; HP LaserJet figures based on maximum capacity smart toner cartridge for that printer; Lexmark x85 figures based on high-yield cartridge. Prices and yield figures from Dabs.com and Simply.co.uk.

HARDWARE HOMEWORK

If you're considering buying a new inkjet, then check out next month's monster inkjet printer Labs with 23 on test, including details of consumable costs and the expected cost per page.

It's also worth looking at consumer review sites like DooYoo (www.doofoo.co.uk). Here you'll find users' comments on their purchases, and while most reviews tend to be 100 per cent positive or 100 per cent negative, they can be a good way of discovering whether your potential purchase has annoying issues, omissions or idiosyncrasies.



While printers with separate coloured ink cartridges generally cost more, the saving you'll make in replacement cartridges will make up for the initial outlay very quickly.

photo. Colour printing is significantly more expensive than black and white, even if you aren't using pricey photo paper, so it makes sense to use colour sparingly.

What about using cheap cartridges? Once again, it depends on your specific requirements. There are two main types of third-party ink: refills and replacement cartridges. The former are designed to be injected into an existing cartridge and the latter are copies of the manufacturers' own cartridges.

Refills are generally designed to be used in complex cartridges such as those produced by HP, which have the print head built into the cartridge itself. In many cases, third-party ink is much cheaper than 'official' ink, but there are some issues to take into consideration. Cartridges with integrated print heads aren't designed to be refilled, and over time you're likely to encounter a degradation in print quality as the nozzles become blocked. If you don't refill the cartridge immediately when the original ink supply runs out, it may dry out and will no longer function, even when you inject new ink. In addition, with both refills and replacement cartridges, the inks that are used may differ from the original specification, which means that they may be more prone to fading.

Print quality isn't paramount for simple documents, especially for internal use, so while third-party cartridges and cheap A4 paper might not offer quite the same

quality as the recommended consumables, you probably won't care. However, if you're going to be printing at photo quality, we'd definitely recommend that you follow the manufacturers' advice and use only the 'official' ink and paper if you want to produce pin-sharp pictures that aren't likely to start fading within a fortnight.

Liquid assets

Now that manufacturers routinely release page yield figures for their consumables, the cost of printing is no big secret, and while ink and cartridges are expensive, much of that expense can be avoided simply by choosing the right printer for your needs.

There's no such thing as a printer that's ideal for every application. If a printer is designed to produce pin-sharp photographs that last for decades, but which cost next to nothing to purchase, its consumables are likely to cost considerably more than those for a printer whose mission is to churn out endless black and white documents, day in, day out. Similarly, a unit that has been designed for occasional home use will have a significantly higher cost per page than one that's been built for business applications.

There are big differences between colour printers too. Colour printers aimed at home users aren't designed for big volumes, so they're unlikely to support high-capacity cartridges or have separate cartridges for each colour. As a result, the hardware is cheap to buy, but you'll find yourself throwing out colour cartridges when the Yellow or Cyan chamber runs dry.

If you look carefully at your requirements, check the cost of consumables and compare cartridge page yields, the cost of printing is unlikely to be an unpleasant surprise. The initial hardware cost is a good indication of a printer's running costs, so if a machine costs £30 then it's a safe bet that it will have a high running cost per page. While it's true that you get what you pay for, if you don't do your homework then you'll end up paying for what you get – again and again and again. **PCP**

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TURN TO PAGE 42 FOR IMMEDIATE SAVINGS

PCPlus SOFTWARE LAB TEST

→ We put our faith in 11 back-up packages



Nick Peers

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Nick's written over 1,000 pages since becoming a journalist in 1994 – sadly they can't be reconstructed into a best-selling novel

Always use protection

Do you regularly make back-ups of your important files and settings? Nick Peers looks at the tools that could save your life

We talked about the hows and whys of backing-up in the Data Protection Acts feature last issue. The 'why' is simple enough: you need to protect your data. However, the 'how' is another matter entirely. A back-up should ideally be stored somewhere separate from your original data, and preferably on a completely separate back-up device – either another hard drive or a CD/DVD. Having obtained this, you then need to make sure your chosen back-up tool will support that device.

You also need your back-up program to do a lot of the hard work for you; something you set up once, and then forget as it performs its task automatically in the background. In fact, while we're at it, why not get a program that can help you to decide (and locate) what you need to

back up, so you spend even less effort on the set-up process? Not everyone will want this hands-off approach, but it's always good to be given the choice.

There are two different kinds of back-up tool for different jobs. This lab test looks at both file back-up tools and imaging tools, the latter geared towards backing up your system by taking an exact byte-for-byte copy of a hard disk, compressing it, and then storing it somewhere else. You can then restore your computer to that point in time, or enter the image file and copy selected files back out of it.

The pros and cons of both file back-ups and image back-ups means it makes sense to buy two products, or find one that covers both. So, now you're aware of the importance of backing up, which back-up tool is right for you? Read on and find out...



Editor's Choice

Our top award for products that combine exceptional performance and quality with superb value for money



Performance Award

Awarded to products that excel in our performance and quality tests, where money is less important



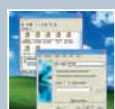
Value Award

Awarded to products that represent outstanding value for money, giving you more bangs per buck

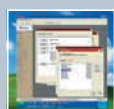
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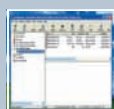
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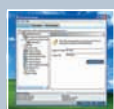
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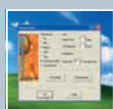
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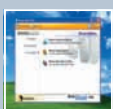
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How we tested

Our test set-up for this month's lab test was as follows...

To put the back-up programs through their paces, we used a BenQ Joybook with 512MB RAM and an internal 60GB hard drive (partitioned) running Windows XP Professional. Our remote back-up devices were a LaCie Pocket 40GB hard drive (USB 2.0) and a LaCie external DVD+RW drive. We also used a Shuttle PC with 1GB of memory, a 60GB internal hard drive, an external Maxtor 120GB drive and a Linksys Network Attached Storage device/unit where applicable.

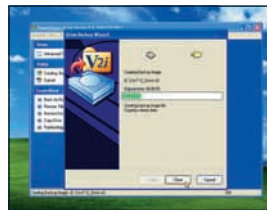
We took images of our two test systems in their current states and then installed a back-up tool. We then used it to see what features it offered, both for backing up and restoring data (tools won bonus points for any data-recovery techniques they were able to employ). How easy was it to use? Did it help you find and locate important files, or were you left to your own devices? Just because you know where your Outlook Express mailboxes are hidden, that doesn't necessarily mean you should have to remember to back them up.

For drive-imaging software, we wanted to see how much of your imaging could be done inside Windows without having to restart your PC; this wasn't just for convenience, as some external drives are inaccessible in

a non-Windows environment. We also tested each tool's performance – amazingly there were big differences between the tools when it came to how fast they copied and compressed data during a back-up cycle. Programs that crashed or refused to install were also frowned upon, although we tried them on both test machines to find out whether the problems were isolated or not.

Finally, there are the data restore and recovery angles to consider: how easy was it to get the data back onto your machine if required? And was it put back in its original location, or were you left to choose the location to

which it was restored? What happened in the event of an emergency, such as if your system failed to start? We looked at each tool's disaster-recovery options, too. See the results for yourself over the following pages. ■



We took images of our test machine's hard disks to ensure accurate results.

ACRONIS True Image 7

INFORMATION

PRICE £35 (£29 ex VAT)

SUPPLIER Softjam

www.softjam.co.uk

INFO www.acronis.com

BACK-UP OPTIONS

File	✗	Ext HDD	✓
Image	✓	FTP	✗
CD/DVD	✓	Disaster recovery	✓
Network	✓		✓

PCPlus ratings

ACRONIS TRUE IMAGE 7

Value ○○○○○○○○●○

Features ○○○○○○○○●○

Performance ○○○○○○○○●○

OVERALL 8

True Image, as the name suggests, is an imaging utility. It was the first to support imaging of the boot partition without restarting in DOS, and this meant it could support a wide range of target media. But this is just the beginning of its versatility.

For example, the program actively encourages you to start the imaging process and then go off and continue with your work – once the image is finished, any changes made since the image was started are incorporated into it. Second, the program supports incremental image back-ups, so you can have a back-up that you update when you want.

If this isn't enough, True Image 7 is capable of creating its own hidden partition at the end of your hard drive

(the size is dependent on how much free space you have) for storing image back-ups that you can't access from outside the program itself. This Acronis Secure Zone can, if it's on your boot drive, be loaded before Windows if necessary, making it a useful fail-safe option if Windows becomes unbootable.

You can view your images directly from Windows Explorer by assigning a virtual drive letter to one of them – the 'drive' is read-only too, so the original archive is always protected. Finally, the program includes the MigrateEasy tool,



which can clone one drive's contents to another and even prepare a disk for that purpose.

The program is currently only available as an electronic download, but it's so easy to use that you won't need the electronic manual. The only drawback is that it's relatively slow.

CENTERED SecondCopy 2000

INFORMATION

PRICE £17 (US – VAT not applicable)

SUPPLIER Centered Systems

www.centered.com

INFO www.centered.com

BACK-UP OPTIONS

File	✓	Ext HDD	✓
Image	✓	FTP	✗
CD/DVD	✗	Disaster recovery	✗
Network	✓		✗

PCPlus ratings

CENTERED SECONDCOPY 2000

Value ○○○○○○○○●○

Features ○○○○○○○○●○

Performance ○○○○○○○○●○

OVERALL 5

SecondCopy 2000 was the direct sequel to SecondCopy 97, proving that this program doesn't get updated that often. However, it remains a favourite in the shareware scene, and it's easy to see why. It's essentially a file-copying utility that supports any drive that can be seen in Windows, including networks and formatted CD-RW and DVD+RW discs.

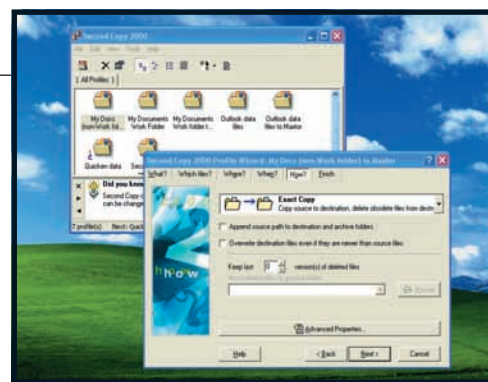
Data is split into profiles, and profiles can be further split into groups. Each profile can only handle a single folder, so it can be fiddly to set up all your important data. No templates are supplied, so you have to manually locate email and other key settings.

Each profile is set up via a choice of wizards: Express or Custom. Choose Custom for maximum control – it

includes options like back-up scheduling (daily, hourly, on set days or during start-up and shutdown) and what kind of back-up you want. By default, 'Simple Copy' is selected, which copies everything in its original state from one folder to another.

But you can choose Exact Copy, which removes obsolete files among others. You can compress this into a Zip, and even set up the program to archive files deleted by an exact copy to another location – just in case.

Gripes include the lack of an incremental data option, so each back-



up is slow and painstaking. Not only that, but the program is unable to copy files that are currently open in another program, prompting you regularly to close the files in question.

Ultimately this is a competent tool, but it's distinctly average and is now looking a little long in the tooth.

DANTZ Retrospect Backup Professional 6.5

INFORMATION

PRICE £76 (£65 ex VAT)
SUPPLIER Dabs.com
 www.dabs.com
INFO www.dantz.com

BACK-UP OPTIONS

File	✓	Ext HDD	✓
Image	✗	FTP	✗
CD/DVD	✓	Disaster recovery	✓
Network	✓		

PCPlus ratings

DANTZ RETROSPECT BACKUP PROFESSIONAL

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	9

Need to back up two or three machines on a network? Then this is the tool for you. Restrospect Backup Professional comes with a main licence for one PC, plus two licences for 'client' PCs or Macs on your network, so you can keep all three backed up from your central PC if you need to.

The interface is reasonably intuitive; back-ups are split into scripts, which you maintain from the Automate menu. It's all quite easy to pick up, so you won't need to spend much time with the 285-page manual. Scripts point towards sets, a pre-defined location for back-ups, so you can create custom scripts for different parts of your drive that point to the same set. The program also has an EasyScript feature, which is designed to back up your

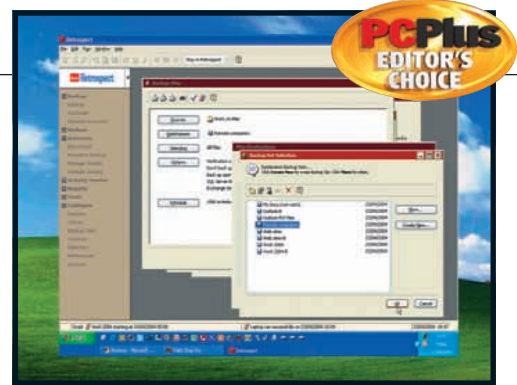
entire computer to a remote location.

This Dantz product isn't as easy to use as some back-up tools, but you can muddle your way through quite quickly, and the wizards make things as friendly as possible. It's a shame there aren't any pre-defined templates like email settings, but experienced users can get past this.

Naturally there are various scheduling tools built-in, and because the program uses an incremental back-up approach (confusingly described as 'normal' back-up), subsequent back-ups don't take long to complete,

especially if you schedule them often. Back-ups can be encrypted for extra security, and there are disaster-recovery features built in, too.

This is an expensive solution for the casual user, but it's packed with features, is well integrated and is thoroughly recommended.



FILESTREAM TurboBackup 3.2

INFORMATION

PRICE £35 (£30 ex VAT)
SUPPLIER Softjam
 www.softjam.co.uk
INFO www.filestream.com

BACK-UP OPTIONS

File	✓	Ext HDD	✓
Image	✗	FTP	✗
CD/DVD	✓	Disaster recovery	✗
Network	✓		

PCPlus ratings

FILESTREAM TURBOBACKUP 3.2

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	6

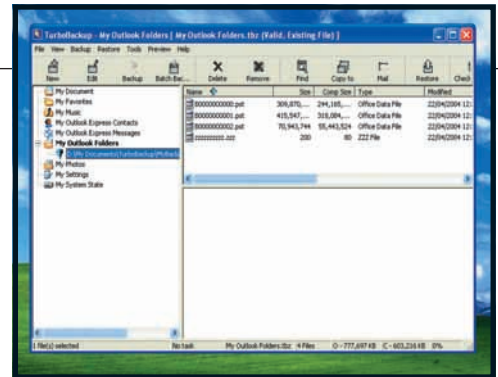
TurboBackup takes a divide-and-conquer approach to archiving. Instead of letting you include as much or as little data as you like, it hands you a selection of pre-defined 'scripts' on a plate – including the system status of NTFS volumes, your email settings (if running Outlook or Outlook Express) and the My Documents folder – and then invites you to add your own. It pays to verify these settings, especially if you've moved the data in question to non-conventional locations.

You can create your own scripts simply enough: a wizard opens, and you're invited to add folders and files, add comments and encrypt the file. Make sure you don't forget to click Configure before starting the job – this will give you extra options, such as the

type of back-up and whether to exclude certain filters.

By default the program uses its own proprietary format, which supposedly makes it easier to replace the files in case of disaster. The downside of this is that browsing your files in the TurboBackup window makes it look as if your files have been turned into gibberish. If this unnerves you (the files are actually perfectly fine), there are Zip and non-compressed options, which both display the names correctly.

Sadly, TurboBackup is not as fast as its name suggests. Our My Documents



folder took 190 seconds to back up as a Zip file – it took just 106 seconds in Genie Backup Manager. And it's a shame that the program steers you towards creating lots of little back-ups instead of letting you craft your own larger, more complete ones. It's a capable tool, but we prefer the other options here.

GENIE-SOFT Genie Backup Manager

INFORMATION

PRICE £28 (US – VAT not applicable)
SUPPLIER Genie Soft
 www.genie-soft.com
INFO www.genie-soft.com

BACK-UP OPTIONS

File	✓	Ext HDD	✓
Image	✗	FTP	✓
CD/DVD	✓	Disaster recovery	✗
Network	✓		

PCPlus ratings

GENIE-SOFT GENIE BACKUP MANAGER

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	8

The friendliness of Genie Backup Manager is apparent from the word go. You're given a choice of two-pane or four-pane wizards, so as advanced users we chose the latter, more 'complicated' four-pane option. The interface opens with a minimal set of available buttons. There are three major functions – Backup Now, Restore Now or Schedule Backup – on the left, and six minor options on the right. All are self-explanatory, and everything you'll ever need to do is right here.

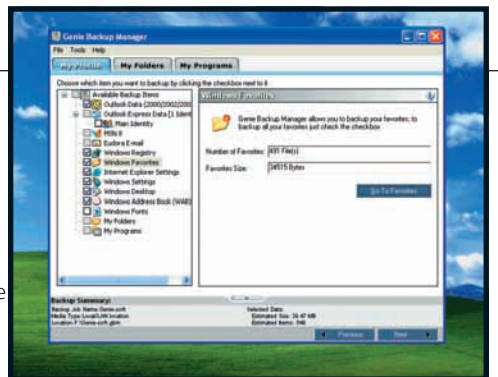
The program falls over itself to help you set up your back-ups. Genie will back up to anything, including a network, hard drive, removable disk (including CD and DVD) and even an FTP server. When you come to choose what to back up, the program scores

points for detecting key system settings and folders (including the Registry), plus your Outlook or Outlook Express email. You're forced to manually choose other folders, like My Documents. There's even a tab called Program Settings, but it's a little disappointing; at present just 12 programs are supported, and these aren't exactly universal.

The program enables you to add compression or 128-bit encryption, pick a back-up type (normal, incremental or mirror), and even shut down your PC when the job is done. The files to be backed up are then verified, and you

simply click Backup Now or Backup Later. Once done, you can verify that the back-up isn't corrupt, too.

Scheduling back-ups is a little restrictive – just daily, one day a week or when you start your PC. Overall, though, we've become big fans of Genie's friendly, powerful approach.



GOLDENSOFT Recovery Genius 5

INFORMATION

PRICE £35 (£30 ex VAT)

SUPPLIER Waycam Technologies

www.recoveryline.net

INFO www.gotogs.com

BACK-UP OPTIONS

File	✓	Ext HDD	✗
Image	✗	FTP	✗
CD/DVD	✗	Disaster recovery	✓
Network	✗		

PCPlus ratings

GOLDENSOFT RECOVERY GENIUS 5

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 7

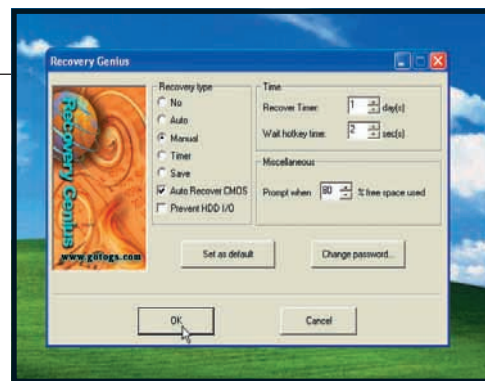
Recovery Genius is the slacker's tool of choice – just install it, and let it worry about your data. The program takes snapshots of your system at regular pre-set intervals, and then at your command attempts to return your hard drive or drives (it only recognises internal ones, however) to the state they were in when you last took a snapshot.

The main configuration is done during the installation process – resist the temptation to click Typical and choose Custom. Here you can set up the program exactly as you want it.

Sounds a little like System Restore, doesn't it? True, but this goes further: uninstall a program and then recover it, and the program magically returns. The same is true of accidentally-deleted folders or files – the program will

cleverly retrieve them, although files and folders added since the last snapshot were taken are removed.

It works by reserving a relatively small amount of hard-drive space as a 'protected area'. This contains everything the program needs to recover your system to the last snapshot. As data protection goes, we would recommend that you use it in conjunction with a more conventional file back-up tool, but it's a good way to protect your system from possible viruses or corrupt files that might render it unbootable – make sure you make



the bootable floppies first, though!

Unfortunately, Recovery Genius is lacking in two key areas. Firstly, all your data is stored on the same disk, so if you have a physical problem with your hard drive it won't be able to help. Secondly, it's a shame that it's not a little more sophisticated.

MICROSOFT Backup Utility/System Restore

INFORMATION

PRICE Free

SUPPLIER On your Windows CD

INFO www.microsoft.com

BACK-UP OPTIONS

File	✓	FTP	✗
Image	✗		
CD/DVD	✓	Disaster recovery	✓
Network	✓		
Ext HDD	✓	2000/XP Pro only	

*Packet-writing software and RW media required

PCPlus ratings

MICROSOFT BACKUP UTILITY/SYSTEM RESTORE

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 7

Microsoft has been supplying a basic back-up tool with Windows since the heady days of 95. It's a basic tick-the-box approach, enabling you to select the files and folders from a two-pane arrangement. It has improved over time – most notably since Windows 2000 and XP added built-in scheduling options – but it remains a sparse tool at best.

Installing it varies according to your flavour of Windows – 2000 and XP Pro users will find it under Accessories\>System Tools on the Start menu, but XP Home users must install it from their XP CD (and do so without the Automated System Recovery component). It's reasonably simple to use, but there are better tools out there, both in terms of functionality and ease of use.

System Restore is found in Windows Me and XP, and this handy tool enables you to take snapshots of key system files and Registry information. You can set these manually, or have them done at a scheduled interval – in XP's case, some system events will automatically trigger System Restore to take a snapshot, like installing unsigned drivers.

It's a capable enough tool, but like a lot of Microsoft's own software it's not perfect and can easily corrupt. If you get infected by a virus, for example, you'll have to destroy all your Restore



points, as the virus often gets trapped inside one – unable to get out, but untouchable by any anti-virus tool. Also, the older saved Restore points get the less useful they become. We prefer drive imaging for large-scale system back-ups, as it ensures that a perfect copy of the system can be taken.

NTI Backup Now! 3 Deluxe Suite

INFORMATION

PRICE £39 (US – VAT not applicable)

SUPPLIER NTI

www.ntius.com

INFO www.ntius.com

BACK-UP OPTIONS

File	✓	Ext HDD	✓
Image	✓	FTP	✗
CD/DVD	✓	Disaster recovery	✓
Network	✓		

PCPlus ratings

NTI BACKUP NOW! 3 DELUXE SUITE

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

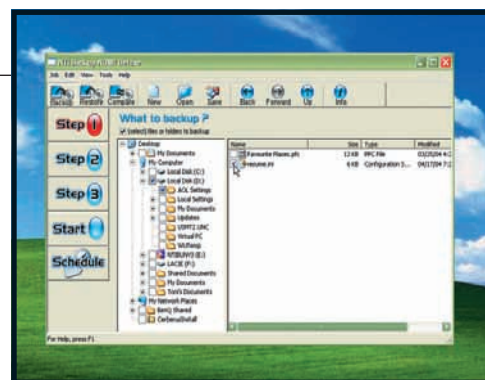
OVERALL 6

This is the only product on test to offer both file and imaging back-up solutions, albeit in the form of two separate programs: NTI Backup NOW! for backing up your files, and NTI DriveBackup! for disk imaging. Although they're installed separately, you can easily switch between the two.

NTI Backup NOW! is easy enough to use. Select your files and folders from the two-pane display and pick your destination – CD, DVD, removable drives and any attached hard drives are supported, as are networks. You can then perform a full, differential or incremental back-up, and tweak the usual settings about compression, passwords and so on. Then you simply give your back-up job a name and off you go. Once done, you can schedule

future back-ups with the flexible scheduling tool. It's a competent application, but there are no automatic settings like email made for you, and the back-up process itself is quite slow.

NTI DriveBackup! has two approaches to drive imaging. Non-system drives can be backed up to a hard drive from within the program itself, but if you want to back up your system drive, it'll only be able to back it up to CD or DVD – thankfully this can be done in Windows, so any USB-attached drives can be hauled into service. However, should you need to



restore the system you'll have to boot from your internal drive. This is a reasonable pair of programs, with just enough integration between the two for you to work with. However, ultimately they lack some of the versatility and the extra options found in other packages reviewed here.

PARAGON Drive Backup 6 Personal Edition

INFORMATION

PRICE £45 (£39 ex VAT)

SUPPLIER Grey Matter

www.greymatter.com/buyers

INFO www.drive-backup.com

BACK-UP OPTIONS

File	✗	Ext HDD	✓
Image	✓	FTP	✗
CD/DVD	✓	Disaster recovery	✓
Network	✓		✓

PCPlus ratings

PARAGON DRIVE BACKUP 6 PERSONAL EDITION

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL

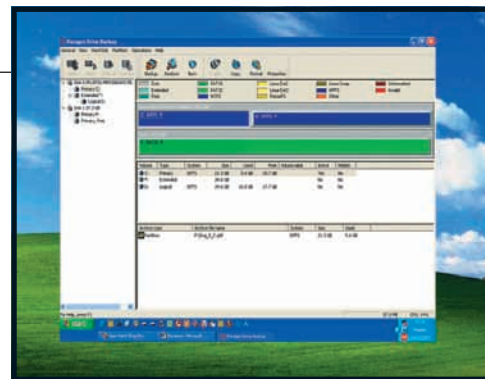
6

This is a seriously basic drive-imaging and cloning tool. Its German origins might make you think there will be some slick engineering beneath its sparse-looking hood, but there's nothing here to suggest that it has an edge over any of its rivals.

Fire it up and you see a screen very much like Partition Magic – all available drives for archiving are displayed bar-like, and you select one by clicking it, hitting the Backup button to image it, the Copy button to clone it to another drive, or the Burn button to archive it to CD or DVD. If you're trying to clone your system drive, Paragon will warn you that it's in use, but you have the option of backing it up without leaving Windows. Only True Image and Drive Image also have this capability.

If imaging a disk, you get to choose its compression level, add a password and type some notes to tell you more about it. Then simply choose an available location and off you go. In our tests, performance was fair – it rivalled Acronis True Image, but fell some way short of Symantec Drive Image. Once complete, you can restore your image, or browse it with Paragon's own Image Explorer tool, enabling you to export single files. It's a little basic, but welcome nonetheless.

Before you forget, you'd better burn a bootable CD for emergencies. Like the



rest of Backup Manager, this process isn't made that easy – install the ISO Burner component, then burn the supplied ISO image. With a fiddly interface, it's hard to recommend Paragon's Drive Backup. It's a proficient tool, but its two main rivals are faster, cheaper and offer more features.

SYMANTEC Drive Image 7 (and 2002)

INFORMATION

PRICE £30 (£26 ex VAT)

SUPPLIER PC World

www.pcworld.co.uk

INFO www.symantec.co.uk

BACK-UP OPTIONS

File	✗	Ext HDD	✓
Image	✓	FTP	✗
CD/DVD	✓	Disaster recovery	✓
Network	✓		✓

PCPlus ratings

SYMANTEC DRIVE IMAGE 7 (AND 2002)

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL

8

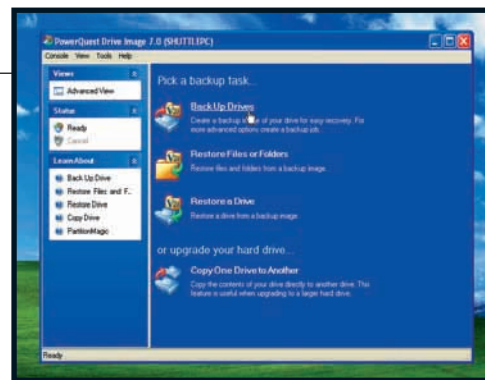
Symantec's Drive Image pack is effectively two products in one box: Drive Image 7 for Windows 2000 and XP, and Drive Image 2002 for everyone else. As fans of the 2002 version we were keen to see what new features were available in version 7.

The major step forward is the implementation of 'hot' back-ups, enabling you to back up any partition in Windows, including the system partition. This means it's safe to use USB and FireWire devices to save back-ups, as they can be readily accessed in Windows and restored using the installation CD, which doubles as the recovery disc.

Initial tests weren't promising. We couldn't install this on our Centrino laptop without a blue screen of death

involving the file gearaspiwdm.sys. Despite our best efforts, we couldn't get the product to work, but after much gnashing of teeth it behaved impeccably from the off on our other test machine.

There are two levels of interface, wizards and a slightly more complicated look, but getting your images to hard drive, network or CD/DVD is simple enough. In terms of performance it's lightning-fast – it took under five minutes to burn a copy of this machine's 7GB boot partition to hard drive (by contrast, Acronis took 12



minutes on the same system, and Drive Image 2002 over 20 minutes).

Drive Image offers the quickest and cheapest way of backing up entire partitions or hard drives. There are question marks over its stability, but if your set-up is in good nick, you should be able to get the best from it.

SYMANTEC Norton Ghost 2003

INFORMATION

PRICE £40 (£34 ex VAT)

SUPPLIER PC World

www.pcworld.co.uk

INFO www.symantec.com

BACK-UP OPTIONS

File	✗	Ext HDD	✓
Image	✓	FTP	✗
CD/DVD	✓	Disaster recovery	✓
Network	✓		✓

PCPlus ratings

SYMANTEC NORTON GHOST 2003

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL

5

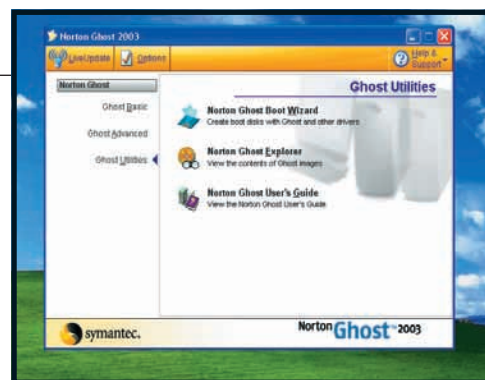
Ghost is a drive-imaging tool with plenty of power and options, but it's been overtaken by time and technology. The fact that it still boots into DOS for any actual imaging is a reflection of this.

The Windows portion of the interface is competent enough; aficionados of other Norton products will feel at home, but it doesn't make things as easy as they could be. The main interface is split into three: Ghost Basic is where you create and restore your images, Ghost Advanced enables you to clone drives, launch Ghost in DOS mode, use peer-to-peer networking to image a drive from one machine to another and more. The final section, Ghost Utilities, includes an Explorer-like interface to browse the contents of

your images and a boot disk wizard for setting up your emergency floppy.

Everything runs smoothly in Windows. Choose your source and target, pick what extra drivers you'll need in DOS (USB, FireWire, network and SCSI are supplied, and you can add your own) and then off you go. At least, that's the theory.

While we had no problems getting a FireWire external drive recognised in DOS, our USB drive would only work with the USB 1.1 drivers, which made it impractical to use (one image took over eight hours to complete). It appears



that if you want external drives, you'll have to chance your arm.

While Ghost once ruled the roost in drive-imaging tools, time has caught up with it and left it gasping in its rivals' wakes. With Symantec's acquisition of Drive Image, it may be heading for a well-deserved retirement.

PCPlus Verdict

If you're backing up important data you can't afford to settle for second best, and we have a clear winner



EDITOR'S CHOICE

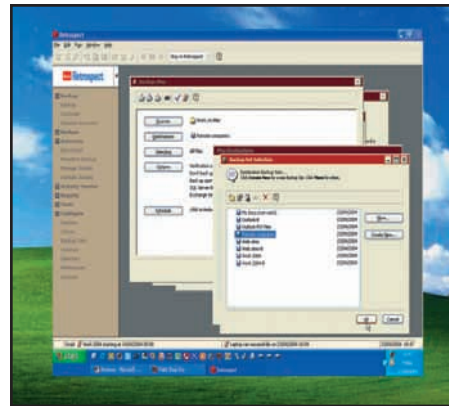
Dantz Retrospect Backup Professional

PRICE £76 (£65 ex VAT)

SUPPLIER Dabs www.dabs.com

INFO www.dantz.com

When it comes to file-copying solutions, Dantz quite simply has no equal. This is the entry-level package in the company's range, and while it's pricier than the other tools on test here, your extra money is very well spent. What do we like about Retrospect Backup Professional? We like its ease of use, its stability and its intuitive interface. We also like the fact that it comes with two client licences, enabling you to back up three computers with one product. We were also impressed by how the software effortlessly spotted the difference between



Macs and laptops in this way. Even if you only have a standalone computer, though, the extra pennies spent now will pay dividends later. There are no automatic settings such as email or Registry provided, but in every other respect it's the only tool worthy of this month's Editor's Choice award. Take another look at the other packages here: you'll see (as we do) that there's no point in skimping on the feature set for such a crucial tool.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

ANALYSIS

You don't know what you've got until you lose it. Our advice? Back up, back up and back up again – preferably using two programs

You need back-up software of one kind or another, and you need it working away in the background, updating your back-ups as regularly as you can spare the system resources – daily might be excessive, but weekly certainly isn't. It's worth investing in a dedicated back-up device to go with your software, too – external hard drives are the most cost-effective solution, especially if rotated with another back-up location like CD, DVD or even your network.

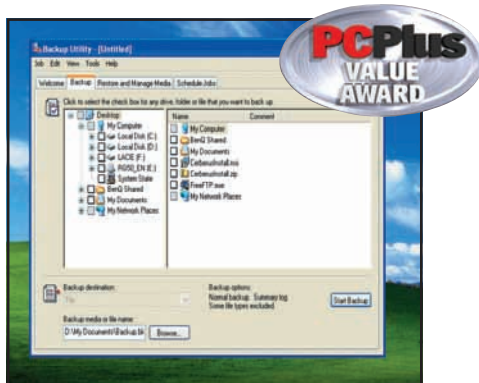
That leaves you the question of which back-up software to choose. We'd actually recommend that you have two programs performing your back-up jobs; use a drive-imaging tool to back up your system drive in case of trouble, and a file-copying program for your personal files and folders.

Norton Ghost used to be the imaging tool of choice, but its stubborn use of DOS makes it an anachronism. Both Paragon and NTI offer reasonable alternatives, but ultimately it's a straight fight between Drive Image 7 and True Image. Drive Image is quicker at producing single images, but True Image boasts more useful features, and behaved itself impeccably on both test machines. Therefore we recommend Acronis True Image 7 as your drive-imaging tool of choice.

When it comes to selecting your file-copying tool, there's a wider choice on offer, but not many programs make the final cut. An honourable mention goes to Genie-Soft's Genie Backup Manager, which has a decent feature-set, including the ability to automatically detect key settings such as email and the Registry.

Goldensoft's Recovery Genius is also worth a mention. This adopts a unique approach to recording all changes to your hard drives in a portion of the drive it reserves for itself. It's effective and it works, but we do wonder what would happen in the event of physical damage to your hard drive.

Ultimately though, the top award goes to Dantz Retrospect Professional. It's pricey but worth it, and if you're on a small network those two-client licences make it good value. But if all else fails, at least use your built-in Backup Utility – the next time your data goes missing or corrupts you'll be glad you did!



BEST VALUE

Microsoft Backup Utility

PRICE Free

SUPPLIER Your Windows CD

INFO www.microsoft.com

We can't stress the importance of backing up enough, but if you can't afford even the modest sums asked for here, at least make sure that you install the Microsoft Backup Utility from your Windows CD. It's pretty basic, but quite effective nonetheless, and the newer your version of Windows, the better it is – scheduling tools appeared with Windows 2000 and XP, for example.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



BEST PERFORMANCE

Acronis TrueImage 7

PRICE £35 (£29 ex VAT)

SUPPLIER Softjam www.softjam.co.uk

INFO www.acronis.com

In terms of raw power, this isn't the quickest drive-imaging tool on the market, but it installed with no problems on both our test machines and delivers a feature-set to make its rivals drool. What's more, its support of incremental back-ups means that subsequent images take a lot less time to copy, so Drive Image's extra speed suddenly doesn't look quite so nippy after all...

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

PCPlus PC SYSTEM LAB TEST

→ We get down to basics with 10 peripheral-free systems



£30,000 PRIZES
TELL US WHAT
YOU THINK!
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**Editor's Choice**

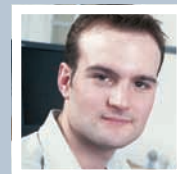
Our top award for products that combine exceptional performance and quality with superb value for money

**Performance Award**

Awarded to products that excel in our performance and quality tests, where money is less important

**Value Award**

Awarded to products that represent outstanding value for money, giving you more bangs per buck

**Russell James**

russell.james@futurenet.co.uk

In his role at the head of the On Test section, Russell sees more PCs than the boss of Scotland Yard

You can't beat the system

Don't waste your money on a second-rate speaker set and monitor. Russell James shows where your cash can be put to better use

According to ICM research, 77 per cent of the UK population now owns a computer. Amongst PC Plus readers, we're willing to bet that that figure would be even higher; you are, after all, reading a specialist IT publication. As far as purchasing goes, this means that very few of you will be first-time buyers; if you're in the market for a new machine, you're probably looking for a replacement for a current system.

If you've had your PC for any length of time, the likelihood is that you'll have upgraded certain components. You may, for example, have invested in a sparkling new 19in monitor, or the most powerful 7.1 speakers that money can buy. If this is the case, there's no way that you're going to throw these out just because you want a faster processor and a bit more memory. Besides, most peripherals supplied by system builders tend to

be of the 'budget', or 'not much cop', variety.

The solution is to buy a system box only. Not only does this enable you to retain your present peripherals, it also means that all of your budget can go towards getting hold of the very best internal parts. Even if you're buying your first machine you can save money in this way, and splash out on the best image and sound devices (see the box on page 91).

In this Lab Test, we run our eyes over 10 PC boxes priced at £899 ex VAT. We've advised manufacturers that we don't want a monitor, we don't want speakers, and we only want a keyboard and mouse if we can have them for free; in other words, we want every penny to go towards the PC itself. The manufacturers have certainly fulfilled our criteria; the vast majority of the entries contain a top-notch Athlon 64 processor, 1GB of RAM and a Radeon 9800XT graphics card. If a monitor and speaker set were included in this price, you would be lucky to see even one of these high-end components.

Your guarantee

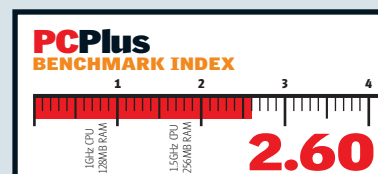
The manufacturers have guaranteed that these PCs will be available with their featured specifications while this issue of PC Plus is on sale – from 09/06/04 to 05/07/04. Any component changes will be due to unforeseen shortages. Note: replacement parts may increase the system price.



Watford Aries Performa 9118
86

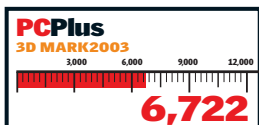
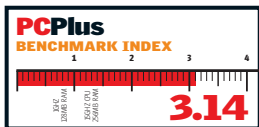
THE PC PLUS BENCHMARK FOR PCs PROVIDES INFORMATION YOU CAN TRUST

The benchmark score for PCs is derived from a comprehensive set of real computing tests which evaluate every aspect of a PC system, not just the speed of the processor. The score provides an objective, scientific speed rating and is based on a score of 1.0 for PC with a 1GHz Athlon processor, 256MB PC100 SDRAM, 10GB UDMA 100 7200 Maxtor hard drive, NVIDIA Quadro 64MB.



INFORMATION

PRICE £1,056 (£899 ex VAT)
DELIVERY £25 (£21 ex VAT)
SUPPLIER Carrera SSC 0871 222 3456
INFO www.carrera.co.uk
WARRANTY Three years on-site, two years back-to-base (labour only)



One of the most important reasons for conducting a system case-only Lab Test is to explore how manufacturers redistribute the money saved by cutting out the monitor and speakers. This makes the Zenith ZNF3-150 an ideal place to begin. Carrera has managed to shoehorn in an array of powerful components to create a package you would usually have to fork out at least £1,500 to get hold of.

At the heart of the system is an Athlon 64 3400+ processor. AMD has just revealed the marginally faster 3600+ but, let's be honest, this chip will

still give you top-notch performance. It's positioned within the Asus K8V Deluxe motherboard – the most common home of VIA's impressive K8T800 chipset. Here, it's given a hefty 1MB of DDR400 RAM to play with. It's no surprise, therefore, that this PC churned out an impressive score of 308 in SYSmark 2002 and 166 in the 2004 version, displaying an excellent degree of competency for any office application.

Things don't slow down elsewhere, either. The Creative Audigy 2 ZS is an excellent sound card, bettering the

motherboard-integrated options found in many of its rivals, while graphics-wise the Radeon 9800 XT was, like the processor, as powerful an engine as you could hope to find until this month – see page 18 for previews of ATI and Nvidia's new powerhouses. Scores of 21,124 and 6,722 in the 2001SE and 2003 versions of 3DMark reflect a huge amount of speed in reserve for games and 3D applications.

If you're concerned about storage, you shouldn't be. Carrera provides both an 8x NEC DVD/RW and a 16x Sony DVD-ROM, together with a 160GB Maxtor hard drive. This S-ATA option isn't quite the quickest on test, with a measured read speed of 477Mbps and a random access time of 14.5ms. We'll be surprised if it gives anybody cause for frustration, though.

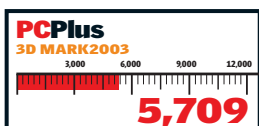
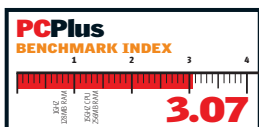
The Zenith is neatly packaged inside a compact black case and comes with an excellent five-year warranty, split into three years on-site and two years back-to-base. You may be wondering, therefore, if there's anything wrong with this machine. Well, we have to criticise its upgrade potential; there's not a single PCI slot left open. Also, in comparison with some of the machines in this group, there's a lack of exciting extras, such as a card reader or a TV tuner. Whether all this is reason enough not to buy Carrera's PC depends on your personal priorities.

PCPlus ratings

CARRERA SSC
ZENITH ZNF3-150

INFORMATION

PRICE £1,056 (£899 ex VAT)
DELIVERY £24 (£20 ex VAT)
SUPPLIER CCL 0127 447 1257
INFO www.cclcomputers.co.uk
WARRANTY One year on-site (labour and parts), two years return-to-base (labour only)



In many ways, the MS32-XS can be seen as the little brother of the Carrera PC reviewed above. In a number of areas, CCL has installed a component that's either one step less powerful or one step lighter in features than the equivalent component in the Zenith. This adds up to a system that, while still feature-heavy and well up to handling most tasks, isn't quite as desirable as Carrera's.

Let's take the processor for example. A 64-bit 3200+, installed within the VIA K8T800 chipset, is supremely powerful; usually we'd give it a hearty

recommendation. All the same, it's not quite as future-proof as the 3400+. It's a similar story with the graphics. The Radeon 9800 Pro won't let anyone down (as a 3DMark2003 score of 5,709 shows), but it can't compete with the might of a 9800 XT, and certainly not with the new market leader that is the X800 XT. As for sound, CCL hasn't even attempted to rival Carrera's Creative Audigy 2 ZS, opting instead to make do with the motherboard-integrated Realtek AC'97 offering. This is fine, but won't satisfy real audiophiles.

There are a few areas in which this

machine excels. If you're into video editing, for instance, then you'll be hugely impressed by the twin 160GB Maxtor hard drives, supplied in a RAID array. HD Tach readings of 474Mbps for average read speed and 12.9ms for random access time illustrate the performance benefit of this arrangement, but the main plus point is, of course, the huge amount of storage space. You'll also have no complaints with an optical provision of an NEC 8x DVD/RW and a Sony 16x DVD-ROM. And, if you fancy dabbling with a bit of multimedia tomfoolery, an 8-in-1 card reader and a Pinnacle TV tuner card will certainly appeal. You should also note that this attractive silver case is one of only two on test to feature a built-in speaker. Predictably, this doesn't boast any true power, but it's better than nothing.

As SYSmark scores of 301 for the 2002 version and 143 for 2004 show, this is a more-than-capable performer within everyday applications. With an extensive list of extras balancing out deficiencies in some of the main components, the MS32-XS is a only a more substantial warranty away from scooping our Value Award. If storage and upgradability (two PCI slots and a DIMM are free) are important to you, then it could even prove to be a better buy than the Carrera.

PCPlus ratings

CCL MS32-XS





As a system builder, Evesham has all the basics right. It delivers new technology quickly, offers a good online ordering service, and provides substantial warranties. Most importantly, however, it tends to produce well-specced, powerful PCs at reasonable prices. The Axis 64 34+ is an excellent example of this.

Many of the Axis 64's components mirror those found in most of the other systems on test. A powerful Athlon 64 3400+ processor, 512MB of DDR400 RAM and even a 160GB Western Digital S-ATA hard drive, featuring a random

access time of 13.8ms, are therefore not as remarkable as they would usually be. They're still extremely desirable, just not unusual. Evesham has, however, pulled off one trick that separates it from the rest of the group, and from any other machine that we had seen before this month. The MSI motherboard is built around the brand-new, and much anticipated, Nvidia Nforce3 250 chipset. You can read more details on this on page 47, but for now, suffice to say that it boasts several advanced features, and enables the 64-bit processor to perform as

never before. That's why this machine managed to out-score every competitor in SYSmark 2002 with 319. Sadly, the 2004 benchmark decided not to run, no doubt denying us of our first record breaker in that test.

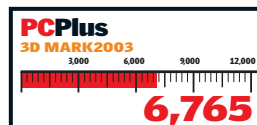
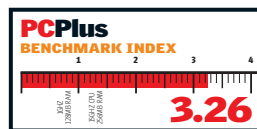
The benefits of this chipset can also be clearly seen in the 3D graphics performance. The Axis 64 uses the powerhouse Radeon 9800 XT card – but then so does almost every other PC on test. A 3DMark2003 score of 6,765, which again beats anything else here, can therefore only be attributed to the main chipset.

The rest of this machine's make-up gives no cause for complaint, either. An all-Sony combination of 8x DVD/RW and 16x DVD-ROM drives, for example, is as good as it gets until dual-layer DVD recording comes along. There's no standalone sound card, but the output from the integrated Nforce3 solution won't disappoint anybody; this is another plus-point of Nvidia's latest. A substantial software bundle, meanwhile, is another plus.

Externally, Evesham has lumped for its usual 'Xpider' case. This is a little tacky, but it's both compact and solid enough. In fact, the only reason that we can see for looking elsewhere is if you're really desperate for a card reader. Apart from that, this system provides anything you could find on the others on show here, and more besides.

INFORMATION

PRICE £1,056 (£899 ex VAT)
DELIVERY £22 (£19 ex VAT)
SUPPLIER Evesham 0870 160 9500
INFO www.evesham.com
WARRANTY Two years on-site, one year return-to-base



PCPlus ratings

EVESHAM AXIS 64 34+

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	9



Having informed suppliers that we were conducting a Lab Test consisting mainly of systems costing £899 ex VAT, we were somewhat surprised when HP chose to submit a machine priced at more than £300 less than that. The fact is, though, that this company concentrates on producing low-cost PCs for small to medium-sized offices. It rarely dabbles in the high-end components that other system builders tend to favour. The D330 therefore sits somewhere close to the top end of its range.

It's immediately obvious where the

money has been saved. This system does without a standalone card for either graphics or sound, leaving both to on-board facilities on the Intel 865G chipset. As you will have guessed from the last sentence, it's also the only PC in this group to use an Intel processor. The 2.8GHz Pentium 4 is hardly the newest chip on the market and, even supported by 512MB of DDR400 RAM, it's not going to blow anybody away. A SYSmark2002 score of 282 (with 148 in the 2004 version) is actually pretty good for this piece of silicon, but it's uninspiring in the context of this Lab

Test, whereas 2,892 in 3DMark2001SE is just poor.

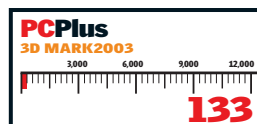
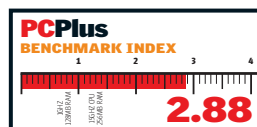
In actual fact, uninspiring sums up the rest of the D330's components as well. An 80GB ATA-100 Seagate hard drive and a Lite-on DVD-ROM/CD-RW combo, for instance, pale in comparison to the rest of the models on display. You will certainly need a second optical drive at some point during your PC's lifespan. The added bonuses of an HP keyboard and mouse and a built-in speaker are poor compensation.

Of course, if you're only spending £689 on the PC you'll have a bit left over to upgrade components, and the D330 leaves plenty of room for expansion. A tidy interior boasts three available PCI slots, one AGP and two DIMMS. Unfortunately, the cheap HP motherboard, and its low-end Intel chipset, won't allow the latest graphics cards or RAM to perform to their utmost ability. Externally, you get six USB 2.0 ports, but no FireWire – another disappointment.

HP's excellent three-year on-site warranty adds some value to its package. If you're looking to upgrade a home PC, however, then this machine is unlikely to be any better than what you've already got. We can only recommend it to small businesses looking for middling performance at a budget price.

INFORMATION

PRICE £689 (£586 ex VAT)
DELIVERY £12 (£10 ex VAT)
SUPPLIER HP 0845 270 4215
INFO www.hp.com/uk
WARRANTY Three years on-site



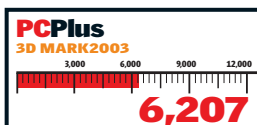
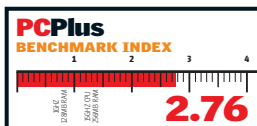
PCPlus ratings

HP COMPAQ D330 MICROTOWER

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	6

INFORMATION

PRICE £704 (£599 ex VAT)
DELIVERY £25 (£21 ex VAT)
SUPPLIER JAL 01782 84 8100
INFO www.jal.co.uk
WARRANTY Two years on-site (parts & labour)



PCPlus ratings

JAL PP-3200BU



Like HP, JAL took the rather strange decision to supply us with a machine priced at far less than the suggested £899 ex VAT for this Lab Test. The smaller company, however, has made a better fist of producing a budget system. Despite boasting slightly less raw power than the Compaq D330, as demonstrated by an average SYSmark 2002 score of 270 and a 2004 result of 133, the PP-3200BU is a far more rounded machine, with several superior features. It will serve those who are unwilling to fork out £1,000 well.

Proving there's still life in Nvidia's older

chipsets, this machine is built around an Asus motherboard that employs the Nforce2 option. This collection of silicon is capable of supporting any Athlon XP processor; JAL has gone for the fastest of these, the 3200+. This is positioned alongside 512MB of DDR400 RAM, giving you a base system that, while unremarkable by today's highest standards, is certainly steady.

In terms of storage, this PC isn't a great deal worse off than most of its more expensive rivals. The hard drive is a 160GB Seagate S-ATA model, which is capable of an average read speed of

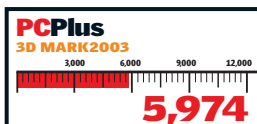
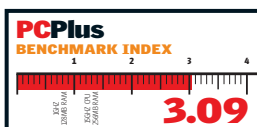
45.3Mbps and a random access time of 12.5ms, according to the ever-reliable HD Tach software. Admittedly optical provision suffers from a little cost-cutting, with the 8x NEC DVD/RW coupled with a 52x CD/RW, rather than a DVD-ROM. However, this loss is made a little more bearable by the presence of a 6-in-1 card reader.

Of course, you also get the usual provision of USB 2.0 and FireWire ports for connecting external devices. Graphics are ably taken care of by a 256MB version of the Radeon 9800 Pro. As we've mentioned elsewhere, this can't quite match up to the 9800 XT, but it comes pretty close. 6,207 3DMarks in the 2003 benchmark – a superb result for this card – bears testimony to this.

If you do want to upgrade any of the PP-3200BU's parts, a tidy interior reveals three spare PCI slots and a healthy provision of drive bays. You can also take the RAM up to a maximum of 3GB if you make use of all three DIMM slots. Whether this is enough to convince you that this cheaper machine is a better bet than the more powerful £899 machines depends entirely on your budget. If you've got the cash, we would recommend paying a little more for the greater future-proofness offered by 64-bit processing. If not, then you shouldn't be too disappointed with what JAL can offer you.

INFORMATION

PRICE £939 (£799 ex VAT)
DELIVERY £46 (39 ex VAT)
SUPPLIER Mesh 0870 046 4747
INFO www.meshcomputers.com
WARRANTY Three years on-site (parts and labour)



PCPlus ratings

MESH MATRIX A64 ULTRA



Criticising a PC that has an Athlon 64 3400+ and 512MB of DDR400 RAM running inside VIA's K8T800 chipset for its features may seem a little harsh, but then that's the nature of this highly-competitive Lab Test. Mesh has chosen to pitch the Matrix A64 Ultra at a price that's £100 lower than most of the competition – it sometimes seems as though it's not worth us specifying a price point for these Lab Tests. This means that it has had to cut a few corners with certain components, leaving its PC some way short of the very best on show.

With such a powerful CPU on show, system performance for office tasks is always going to be strong. A terrific SYSmark 2002 score of 303 is therefore no surprise. The processing of 3D graphics, however, is compromised by the decision to include a 128MB Radeon 9800 Pro, rather than the 256MB XT version. A 3DMark2003 score of 5,974 demonstrates that this machine is still perfectly capable of running any game, but it's not quite as future-proof, nor indeed as good with current games, as the more expensive rivals.

There's no sign of any cost-cutting in

the choice of a standalone Creative Audigy 2 ZS sound card, and the same can certainly be said of a Maxtor S-ATA hard drive featuring a whopping 200GB of storage space. HD Tach demonstrated the abilities of this drive by measuring a 13.3ms random access time. The optical provision, though, isn't quite up to the highest standards. An 8x Sony DVD/RW is great, but the second drive is a 52x CD/RW, rather than a DVD-ROM. We get bored of saying it, but plenty of people want to copy DVDs these days (legally of course); manufacturers need to start giving them the components with which they can do so.

Mesh's usual intimidating black case boasts an excellent quick-release system and a tidy interior, which provides easy access to a substantial number of free PCI slots, DIMMs and drive bays. We're also very impressed by the provision of six USB 2.0 and three six-pin FireWire ports for external expansion.

The bundling of Microsoft Works Suite and two Pinnacle programs, plus an excellent three-year on-site warranty, round off what would usually be considered a very solid package. Mesh had made a couple of glaring errors, though, and within such a competitive environment that's enough to ensure that it misses out on an award by quite some margin.

MICROLAND TECH Plus 218.01



Judging performance on a system like the TECH Plus 218.01 is extremely difficult. For a start, it failed to complete either the 2002 or the 2004 version of SYSmark, leaving us with no scores by which we could compare it with the rest of the systems on test. Usually, however, this wouldn't be a huge problem, and you shouldn't take it as a sign that this PC will struggle in the real world. This PC has such a tremendous specification that you would expect it to fly through tasks like a plane through clouds. Sometimes, however, it doesn't. During our tests,

problems with either the hard drive or the optical drives occasionally caused it to stutter, or even grind to a halt completely. Whether this would be the case with a machine that you would buy is difficult to say. We can only review what we've given, and in this case there are some problems.

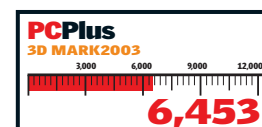
You may, quite reasonably, be asking why we would give a temperamental system a performance score as high as seven. Well, 90 per cent of the time this PC will perform tremendously. Its Nforce3 150 chipset isn't as good as the new 250 version, or VIA's K8T800, but

when it's set up with an Athlon 64 3400+ and 1GB of DDR400 RAM it fares pretty well. The 160GB Maxtor S-ATA hard drive is also capable of excellent read and write speeds, while the pairing of an 8x NEC DVD/RW with a 16x Sony DVD-ROM should satisfy anybody. This is supplemented by a 6-in-1 card reader, which is ideal for transferring images or data from small devices such as digital cameras or PDAs. Like most of the £899 machines on test, this one is also equipped with a 256MB Radeon 9800 XT. It's no surprise, therefore, that the 3DMark2003 score is superb – an important fact when other benchmarks have failed to complete.

A typical three-year warranty should ensure that any problems you do have are sorted out quickly. We do, however, need to complain about a couple of other frustrations. Firstly, Microland's choice of case is a hideous black number, with flashing lights and over-sized logos that will only appeal to children. Secondly, the lack of thumbscrews or a quick-release mechanism makes access to the interior of this monstrosity a tricky business. These may not sound like major issues, but in such a highly-competitive Lab Test they're enough to ensure that this PC doesn't win an award. They may also be enough to make you look elsewhere.

INFORMATION

PRICE £1,056 (£899 ex VAT)
DELIVERY £22 (£19 ex VAT)
SUPPLIER Microland 0870 443 0399
INFO www.microlanduk.com
WARRANTY One year on-site, two years back-to-base



PCPlus ratings

MICROLAND TECH PLUS 218.01

Value	●●●●●●●●●●●●●●●●
Features	●●●●●●●●●●●●●●●●
Performance	●●●●●●●●●●●●●●●●
OVERALL	7

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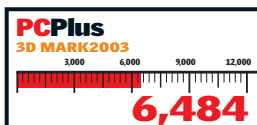
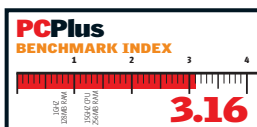
† The offer of a free £50 book voucher is available while voucher stocks last.



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INFORMATION

PRICE £1,056 (£899 ex VAT)
DELIVERY £40 (£34 ex VAT)
SUPPLIER Tiny.Com 0870 830 3156
INFO www.tiny.com
WARRANTY Three years return-to-base



PCPlus ratings

TINY.COM
TORNADO 3400-64 XL

Let it be heard throughout the PC industry: Tiny is no longer a name to fear. Following the original company's determined attempt to destroy its own brand name with poor products and shoddy customer service, Time's decision to take it on, albeit with an added 'Com', was a brave one. Over the past few months, however, we've received a number of impressive PCs from this second incarnation, and the Tornado 3400-64 XL lives up to this strong heritage.

One of the major problems with Tiny Com's strategy of compiling high-end

components at low prices is that it's often forced to save money in areas such as customer service and warranty provision. It's reassuring on this occasion, therefore, to see a three-year guarantee in place, even if it is a return-to-base option. This enables us to concentrate on praising the performance of the machine.

Like many of the systems in this group, the Tornado 3400-64 XL is based around an Athlon 64 3400+ and 1GB of DDR400 RAM. In this instance, the motherboard comes from a small Taiwanese company named FIC, but

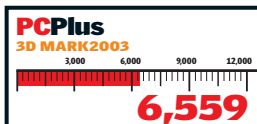
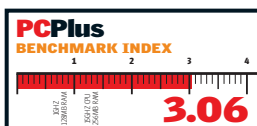
the main chipset is still VIA's popular K8T800. This means that performance levels are extremely similar to those of the Carrera, the Mesh and the CCL. As it happens, SYSmark2002 slightly favours this machine, awarding it a magnificent score of 310 (it also managed 177 in SYSmark 2004).

One area in which Tiny has really splashed out is storage. Two Western Digital ATA-133 drives give you a grand total of 400GB of space — fill that up if you can! An 8x DVD/RW from NEC and a Sony 16x DVD-ROM, meanwhile, are almost as impressive. If 3D games tickle your fancy, you'll be pleased to see a 256MB Radeon 9800 XT, which mustered tremendous scores in all of our benchmarks, including 6,484 in the DirectX 90-reliant 3DMark2003. And if you're more of a music fan, a Creative Audigy 2 ZS ensures top-quality sound output in any circumstance.

Annoyingly, the lack of any free PCI slots hinders any upgrade ambitions. This is the one notable downside to the FIC motherboard. As it stands, though, this is one of the top performers on show. Only Evesham's machine beats it for raw power and, as that system has already won the Editor's Choice award, we have no qualms about giving Tiny the Performance gong by way of a silver medal. If you're in the market, this is an great option.

INFORMATION

PRICE £1,056 (£899 ex VAT)
DELIVERY £41 (£35 ex VAT)
SUPPLIER Watford 0870 027 0900
INFO www.savastore.com
WARRANTY One year on-site (parts and labour), five years return-to-base (labour only)



PCPlus ratings

WATFORD ARIES
PERFORMA 9118

Take CCL's machine, swap the Radeon 9800 Pro for an XT model and add three years to the 'return-to-base' part of the warranty. What do you get? The Aries Performa 9118. It's magic within a PC Lab Test

The use of the 256MB XT version of ATI's high-end graphics series results in graphics performance that's right at the top end of the scale, at least until the appearance of the new X800 chipset over the next few weeks. 3DMark2003 recorded a score of 6,559, which is close to even the Evesham's magnificent result. Apart from that, though, Watford's

submission virtually mirrors CCL's. The main chipset is the same VIA K8T800, the processor is an identical, and still impressive, 64-bit 3400+, and you get 1GB of indistinguishable DDR400 RAM. You won't be too shocked, therefore, to hear that when it comes to business applications performance is more than vaguely similar. A SYSmark 2002 score of precisely 300 is one point lower than the MS32-XS managed, while 157 in the 2004 version is 14 higher, and neither difference is large enough to represent any noticeable discrepancy in real-life tasks and applications.

It's hardly worth us writing the rest of this review, as you could just read the one of CCL's system. We gave high praise to the twin 160GB S-ATA drives in that one, and we'll do the same here. This time around we measured an average read speed of 573Mbps and a 15ms random access time. We were also delighted to get an 8x DVD/RW and a 16x DVD-ROM before, and we're equally ecstatic now.

Unfortunately, we do have a couple of issues with this machine, one of which we also had with CCL's. The shared problem is the absence of a standalone sound card. However, we're not overly-concerned about that, as VIA's motherboard-integrated option is up to most people's needs and expectations. Of more concern is Watford's flimsy system for securing interior cards. Rather than have you use screws, it provides plastic clips that are supposed to lock PCI and AGP devices to the mainboard. Unfortunately, these aren't really strong enough; we certainly couldn't leave one of Nvidia's over-sized graphics cards in one with any confidence.

But we shouldn't allow these clouds to spoil what is an otherwise-clear horizon. In a less-competitive Lab Test the Performa 9118 would be a definite award winner. As it is, it's just an excellent alternative.

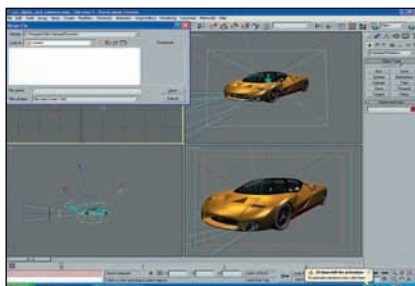
Changing our test: the new benchmark

SYSmark2004 has arrived – we introduce it to the PC Plus index

As Harold Wilson once almost said, two years is a long time in computing. During the past 730 days, we've seen the arrival of Centrino notebooks, Athlon 64 processors and Microsoft's Media Center. During all this time one thing has remained constant: SYSmark 2002. At last, however, the time has come for even this great warhorse of PC benchmarking to step aside. The continuing improvement in computer technology has forced its developer, BAPCo, to release its successor. SYSmark 2004 has some rather large shoes to fill. So, is it up to the task?

For those of you unfamiliar with SYSmark, it's a test designed to measure the performance of a PC within a work environment. For each version, the developers create a number of simulated workloads within commonly-used applications, split into Office Productivity and Internet Content Creation sections. The software measures the performance of a machine in completing these tasks.

Obviously, a major upgrade in the 2004 edition is the updating of the applications used – a full program list can be found below. This isn't the only improvement, though. BAPCo says it has worked hard to make SYSmark 2004 much more representative of how a real person would interact with their PC. A major part of this is the incorporation of 'think times'. These are pauses within the simulations, which are designed to occur at junctures where a user might stop for consideration. The idea is that the behaviour of both the application and the operating system is more realistic if the PC is allowed to dedicate time to housekeeping tasks such as memory management and scheduling.



Another major enhancement within SYSmark 2004 is the ability to read a program's response time to user interaction. Previous versions of the benchmark have relied solely on start-to-finish speed measurements. The simple fact is that most computer users care far more about a machine's ability to respond to instructions than they do about its raw speed when left unattended.

Naturally, BAPCo also claims that its latest edition is more stable and reliable than anything that it has produced before. As yet, we've seen no evidence of this; SYSmark 2004 failed to run on three of the nine machines in this Lab Test, making it impossible for us to use it as a comprehensive test methodology. But new benchmarks do tend to experience teething problems due to their complexity, and the vast number of different components that they have to work with. We fully expect to see patches that fix any problems in the near future.

The PC Plus Benchmarks

As it stands, the PC Plus system benchmark is based upon a machine's performance within SYSmark 2002. When we first obtained this older software, we found that a PC running a 1GHz Athlon CPU, 256MB of PC100 RAM and a 7200rpm Maxtor hard drive obtained a score of 98. We made this our base system, and awarded it a PC Plus benchmark of 1.0. From then on, we have divided every SYSmark 2002 score we have obtained by 98, so that each machine could be compared to this base system, and given an appropriate benchmark figure.

From next month, we'll be performing a similar calculation upon SYSmark 2004 scores. This time around, our base system is built around an Abit motherboard with the NForce2 chipset, an Athlon XP 3200+ CPU, 512MB of DDR400 RAM and a 7200rpm Western Digital hard drive. This machine chalked up a score of 130 in SYSmark 2004. We will therefore be dividing every PC's result by this figure to determine its PC Plus 2004 Benchmark figure. The chart on the right shows what each system in this Lab Test would have scored had the new benchmark been implemented this month.

PC Plus Benchmarks 2002 and 2004

Carrera SSC Zenith ZNF3-150

SYSmark 2002 score - **308**
PC Plus 2002 Benchmark - **3.14**
SYSmark 2004 score - **166**
PC Plus 2004 Benchmark - **1.28**

CCL MS32-XS

SYSmark 2002 score - **301**
PC Plus 2002 Benchmark - **3.07**
SYSmark 2004 score - **143**
PC Plus 2004 Benchmark - **1.10**

Evesham Axis 64 34+

SYSmark 2002 score - **319**
PC Plus 2002 Benchmark - **3.26**
SYSmark 2004 score - **DNF**
PC Plus 2004 Benchmark - **Unavailable**

HP Compaq D330 Microtower

SYSmark 2002 score - **282**
PC Plus 2002 Benchmark - **2.88**
SYSmark 2004 score - **148**
PC Plus 2004 Benchmark - **1.14**

JAL PP-3200BU

SYSmark 2002 score - **270**
PC Plus 2002 Benchmark - **2.76**
SYSmark 2004 score - **133**
PC Plus 2004 Benchmark - **1.02**

Mesh Matrix A64 Ultra

SYSmark 2002 score - **303**
PC Plus 2002 Benchmark - **3.09**
SYSmark 2004 score - **DNF**
PC Plus 2004 Benchmark - **Unavailable**

Microland TECH Plus 218.01

SYSmark 2002 score - **DNF**
PC Plus 2002 Benchmark - **Unavailable**
SYSmark 2004 score - **DNF**
PC Plus 2004 Benchmark - **Unavailable**

Tiny.Com Tornado 3400-64 XL

SYSmark 2002 score - **310**
PC Plus 2002 Benchmark - **3.16**
SYSmark 2004 score - **177**
PC Plus 2004 Benchmark - **1.36**

Watford Aries Performa 9118

SYSmark 2002 score - **300**
PC Plus 2002 Benchmark - **3.06**
SYSmark 2004 score - **157**
PC Plus 2004 Benchmark - **1.21**

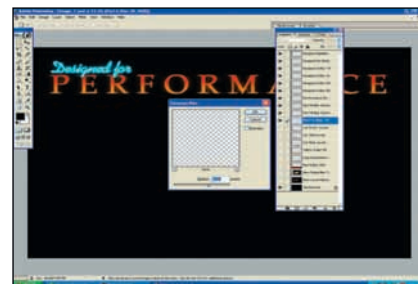
The applications used within SYSmark 2004

Internet Content Creation:

Adobe After Effects 5.5
Adobe Photoshop 7.01
Adobe Premiere 6.5
Discreet 3ds max 5.1
Macromedia Dreamweaver MX
Macromedia Flash MX
Microsoft Windows Media Encoder 9 Series
Network Associates McAfee VirusScan 7.0
WinZip Computing WinZip 8.1

Office Productivity:

Adobe Acrobat 5.0.5
Microsoft Access 2002
Microsoft Excel 2002
Microsoft Internet Explorer 6
Microsoft Outlook 2002
Microsoft PowerPoint 2002
Microsoft Word 2002
Network Associates McAfee VirusScan 7.0
ScanSoft Dragon Naturally Speaking 6 Preferred
WinZip Computing WinZip 8.1



This month's contenders up close...



DETAILS

Manufacturer	Carrera SSC	CCL	Evesham	HP	JAL
System Name	Zenith ZNF3-150	MS32-XS	Axis 64 34+	Compaq D330 microtower	PP-3200BU
Price	£1,056 (£899 ex VAT)	£1,056 (£899 ex VAT)	£1,056 (£899 ex VAT)	£689 (£586 ex VAT)	£704 (£599 ex VAT)
Delivery	£22 (£19 ex VAT)	£24 (£20 ex VAT)	£22 (£19 ex VAT)	£12 (£10 ex VAT)	£25 (£21 ex VAT)
Supplier	Carrera SSC 0871 222 3456	CCL 0127 447 1257	Evesham 0870 160 9500	HP 0845 270 4215	JAL 0178 284 8100
Info	www.carrera.co.uk	www.cclcomputers.co.uk	www.evesham.com	www.hp.com/uk	www.jal.co.uk
Warranty	Three years on-site, two years back-to-base, labour only	One year on-site (labour and parts), two years return-to-base (labour only)	Two years on-site, one year return-to-base	Three years on-site	Two years on-site (parts & labour)

SPECIFICATIONS

CPU	2.2GHz AMD Athlon 64 3400+	2GHz AMD Athlon 64 3200+	2.2GHz AMD Athlon 64 3400+	2.8GHz Intel Pentium 4	2.2GHz AMD Athlon XP 3200+
Level 2 cache	1MB	1MB	1MB	512KB	512KB
System Board	Asus K8V Deluxe	MSI K8T Neo-FIS2R	MSI MS-7030	HP 085Ch	Asus A7N8X-G Deluxe
Chipset	VIA K8T800	VIA K8T800	Nvidia nForce3 250	Intel 865G	Nvidia nForce2
Memory/bus clock (MHz)	400/400	400/400	400/400	400/400	400/400
Supplied Memory	1GB	1GB	512MB	512MB	512MB
Maximum Memory	3GB	3GB	3GB	1GB	3GB
Hard Drive	160GB Maxtor S-ATA (7200rpm)	2x Hitachi 160GB S-ATA (7200rpm)	Western Digital 160GB S-ATA (7200rpm)	Seagate 80GB ATA-100 (7200rpm)	Seagate 160GB S-ATA (7200rpm)
Optical Drives	NEC 8x DVD/RW, Sony 16x DVD-ROM	NEC 8x DVD/RW, Sony 16x DVD-ROM	Sony 8x DVD/RW, Sony 16x DVD-ROM	Lite-on 16x DVD-ROM/CD-RW Combo	NEC 8x DVD/RW, BCE 52x CD/RW
Graphics Card	256MB ATI Radeon 9800XT	128MB ATI Radeon 9800 Pro	256MB ATI Radeon 9800XT	On-board Intel Extreme Graphics 2	256MB ATI Radeon 9800 Pro
Sound Card	Creative Sound Blaster Audigy 2 ZS	On-board Realtek AC'97	On-board nForce3	On-board SoundMAX AC'97	On-board nForce
Comms	56K Modem, 10/100/1000 Ethernet	56K Modem, 10/100/1000 Ethernet	56K Modem, 10/100/1000 Ethernet	56K Modem, 10/100/1000 Ethernet	56K Modem, 10/100/1000 Ethernet
Other Drives/Devices	Floppy Drive	Floppy drive, removable 8-in-1 card reader, Pinnacle TV card,	Floppy Drive	Floppy drive	Floppy drive, 6-in-1 card reader
Extras	None	Built-in speaker	None	HP Compaq Keyboard and mouse, built-in speaker	None

EXPANDABILITY

PCI Slots total/free	5/0	5/2	5/3	3/3	5/3
Drive bays internal/external	5x 3.5in/2x 3.5in, 4x 5.25in	4 x 3.5in /2 x 3.5in, 4 x 5.25in	3x 3.5in/4x 5.25in, 1x 3.5in	2x 3.5in/2x 3.5in, 2x 5.25in	4x 3.5in/2x 3.5in, 4x 5.25in
External Ports	6x USB 2.0, 3x 6-pin FireWire, Serial, Parallel, PS/2 Keyboard/Mouse, Gameport, VGA-Out, DVI-I, S-Video, S/PDIF In/Out, Audio Out, 2x Headphones, 2x Mic	8x USB 2.0 (one needed to power front ports), 2x 6-pin FireWire (one needed to power front ports), 4-pin FireWire, Serial, Parallel, TV RF, Composite, 2x S-Video, VGA-Out, DVI-I, S/PDIF In/Out, 2x Audio-Out, Headphones, Mic	6x USB 2.0, 6-pin FireWire, Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, DVI-I, S-Video, S/PDIF In/Out, Audio Out, 2x Headphones, 2x Mic	6x USB 2.0, Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, Audio-Out, 2x Headphones, 2x Mic	6x USB 2.0, Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, DVI-I, S-Video, Audio-Out, S/PDIF In/Out, 2x Headphones, 2x Mic

SOFTWARE

Operating System	Microsoft Windows XP Home	Microsoft Windows XP Home	Microsoft Windows XP Home	Microsoft Windows XP Pro	Microsoft Windows XP Home
Filing System	NTFS	NTFS	NTFS	NTFS	FAT32
Bundled Software	Microsoft Works Suite 2004	Microsoft Works Suite 2004, Panda Platinum Antivirus	Pinnacle Instant CD/DVD SE, Pinnacle Studio 9.0 SE, Microsoft Works 7	Intervideo WinDVD	Microsoft Works Suite 2004, Game Pack Including Unreal Tournament Game of the Year Edition, Tactical Ops, Rainbow Six, I-War 2, Red Faction

PCPlus verdict 9
PCPlus verdict 8
PCPlus verdict 9
PCPlus verdict 6
PCPlus verdict 7



DETAILS

Manufacturer	Mesh	Microland	Tiny.Com	Watford
System Name	Matrix A64 Ultra	TECH Plus 218.01	Tornado 3400-64 XL	Aries Performa 9118
Price	£939 (£799 ex VAT)	£1,056 (£899 ex VAT)	£1,056 (£899 ex VAT)	£1,056 (£899 ex VAT)
Delivery	£46 (39 ex VAT)	£22 (£19 ex VAT)	£40 (£34 ex VAT)	£41 (£35 ex VAT)
Supplier	Mesh 08700 46 47 47	Microland 0870 443 0399	Tiny.Com 0870 830 3156	Watford 0870 027 0900
Info	www.meshcomputers.com	www.microlanduk.com	www.tiny.com	www.savastore.com
Warranty	Three years on-site (parts and labour)	One year on-site, two years back-to-base	Three years return-to-base	One year on-site (parts and labour), five years return-to-base (labour only)

SPECIFICATIONS

CPU	2.2GHz AMD Athlon 64 3400+	2.2GHz AMD Athlon 64 3400+	2.2GHz AMD Athlon 64 3400+	2.2GHz AMD Athlon 64 3400+
Level 2 cache	1MB	1MB	1MB	1MB
System Board	Asus K8V Deluxe	Chaintech Zenith ZNF3-150	FIC PT-2200	MSI K8T Neo-FIS2R
Chipset	VIA K8T800	Nvidia NForce3 150	VIA K8T800	VIA K8T800
Memory/bus clock (MHz)	400/400	400/400	400/400	400/400
Supplied Memory	512MB	1GB	1GB	1GB
Maximum Memory	3GB	3GB	2GB	3GB
Hard Drive	Maxtor 200GB S-ATA (7200rpm)	Maxtor 160GB S-ATA (7200rpm)	2x Western Digital 200GB ATA-133 (7200rpm)	2x VIA 160GB S-ATA (7200rpm)
Optical Drives	Sony 8x DVD/RW, Sony 52x CD/RW	NEC 8x DVD/RW, Sony 16x DVD-ROM	NEC 8x DVD/RW, Sony 16x DVD-ROM	Sony 8x DVD/RW, Sony 16x DVD-ROM
Graphics Card	128MB ATI Radeon 9800 Pro	256MB ATI Radeon 9800 XT	256MB ATI Radeon 9800XT	256MB ATI Radeon 9800XT
Sound Card	Creative Sound Blaster Audigy 2 ZS	On-board VIA Envy24	Creative Sound Blaster Audigy 2 ZS	On-board Realtek AC'97
Comms	56K Modem, 10/100/1000 Ethernet	56K Modem, 10/100/1000 Ethernet	56K Modem, 10/100 Ethernet	56K Modem, 10/100/1000 Ethernet
Other Drives/Devices	Floppy Drive	Floppy Drive, 6-in-1 card reader	Floppy drive, 10-in-1 card reader	Floppy drive
Extras	None	None	Tiny keyboard, M04 optical mouse	None

EXPANDABILITY

PCI Slots total/free	5/2	5/4	3/0	5/3
Drive bays internal/external	3x 3.5in/1x 3.5in, 3x 5.25in	4x 3.5in/2x 3.5in, 4x 5.25in	2x 3.5in/2x 3.5in, 3x 5.25in	3x 3.5in/2x 3.5in, 4x 5.25in
External Ports	6x USB 2.0, 3x 6-pin FireWire, Serial, Parallel, PS/2 Keyboard/Mouse, Gameport, VGA-Out, DVI-I, S-Video, S/PDIF In/Out, Audio Out, Headphones, Mic	4x USB 2.0, 3x 6-pin FireWire, 2x Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, DVI-I, S-Video, S/PDIF In/Out, Audio-Out, 2x Headphones, 2x Mic		8x USB 2.0, 2x 6-pin FireWire, 4-pin FireWire, Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, DVI-I, S-Video, Audio-Out, S/PDIF In/Out, 2x Headphones, 2x Mic

SOFTWARE

Operating System	Microsoft Windows XP Home	Microsoft Windows XP Home	Microsoft Windows XP Pro	Microsoft Windows XP Home
Filing System	NTFS	FAT32	FAT32	NTFS
Bundled Software	Microsoft Works Suite 2004, Pinnacle Studio 9.0 SE, Pinnacle Instant CD/DVD	Norton AntiVirus, Adobe Photoshop Album SE, Imagemore, ProMagic 6.0, Nero Suite 6.0.	Microsoft Works 7, Microsoft Office XP 60-day trial, Cyberlink PowerDVD, Pinnacle DVD copying suite	Windows XP Home, Nero, PowerDVD, Ability Office, Panda Antivirus

PC Plus verdict 7

PC Plus verdict 7

PC Plus verdict 9

PC Plus verdict 8

PCPlus Results

Each PC is put through a series of benchmarks to give an accurate picture of its overall performance

Our benchmarks are designed to rigorously test every aspect of the PC in order to make an exact judgement on its overall performance. Each chart enables you to tell, at a glance, how each PC has performed in the individual areas, plus its overall score (shown opposite).

The PC Plus index gives a relative score against a baseline system that achieves a benchmark score of 1.0. The Baseline system consists of the following specification: 1GHz AMD Athlon CPU, 256MB PC100 SDRAM, 10GB UDMA 100 7200 RPM Maxtor hard drive and 64MB NVIDIA Quadro graphics card.

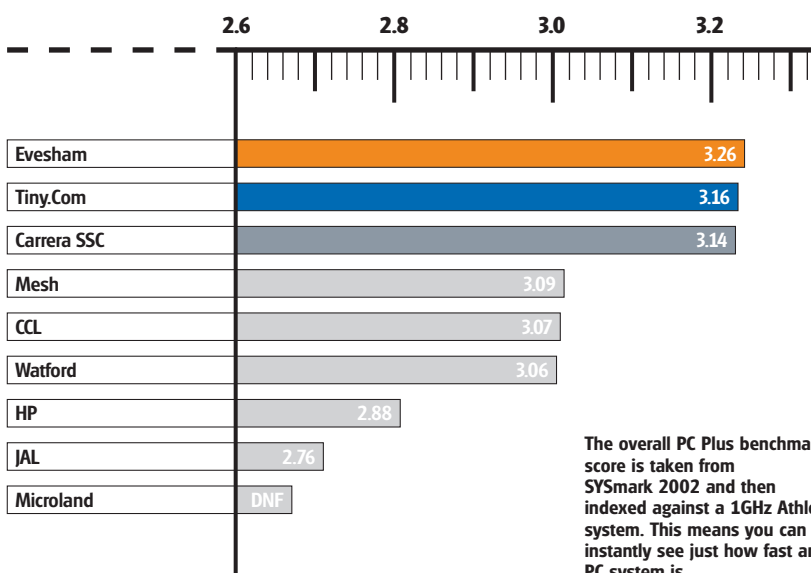
While every effort is made to test each PC to the same standard, unfortunately we sometimes receive PCs that refuse to co-operate with the benchmarking tools we use. In these instances we take the scores that we've been able to obtain and make an assessment of the PC's performance based on these results. However, the PC will not receive a PC Plus index if both parts of the SYSmark test do not complete.

AWARD WINNERS

■ Editor's Choice
■ Value
■ Performance

PCPlus

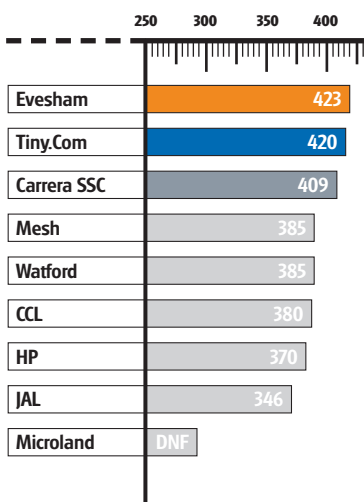
Combined benchmark scores



The overall PC Plus benchmark score is taken from SYSmark 2002 and then indexed against a 1GHz Athlon system. This means you can instantly see just how fast any PC system is.

SYS mark2002 results

Internet Content Creation

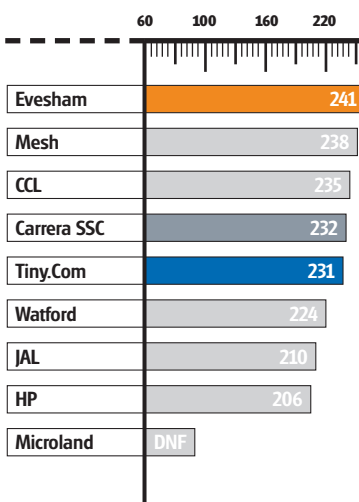


SYSmark 2002's Internet Content benchmark tests a PC's ability to cope with content creation. A series of scripts runs a number of demanding applications, including Adobe Photoshop 6.01, Adobe Premiere 6.0, Microsoft Media Encoder 7.1, Macromedia Dreamweaver 4 and Flash 5.

Bigger is better

SYS mark2002 results

Office Productivity

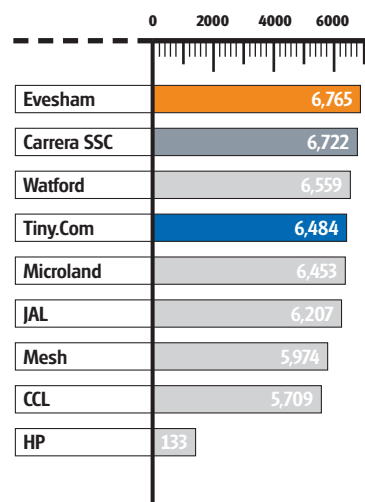


SYSmark 2002's Office Productivity benchmark tests a PC's ability to cope with everyday office applications. A series of scripts run a number of demanding applications, including Microsoft Office XP versions of Word, Excel, PowerPoint, Outlook and Access.

Bigger is better

3DMark2003 Results

1,024 x 768 x 32-bit



3DMark2001SE benchmarks a PC's graphics subsystem at a number of different resolutions. Although only the default scores are listed here, each PC is also tested at the higher resolution of 1,280x 1,024x16-bit. Some LCDs can only be tested at their native resolution.

Bigger is better

PCPlus Verdict

This month's test shows how one added feature can make the difference between an also-ran and a winner



EDITOR'S CHOICE

Evesham Axis 64 34+

PRICE £1,056 (£899 ex VAT)

SUPPLIER Evesham 0870 160 9500

INFO www.evesham.com

As is often the case with price point-based Lab Tests, many of this month's competitors use pretty much the same base specification. An Athlon 64 3400+ processor, 1GB of DDR400 RAM and a Radeon 9800 XT graphics card is the staple diet. As it happens, the Evesham machine uses 512MB less memory. Otherwise, though, it sticks rigidly to this model. So, how does it out-perform every other PC on test? We can answer this in one word and one number: NForce3 250. Nvidia's new, high-power



chipset gives the Axis 64 the edge, bringing better performance for both office applications and games.

If we were being fussy, we would like to see a standalone sound card and some kind of multimedia card reader. Otherwise, this is about as good as a PC gets. Evesham has shown perfectly the benefits that can be garnered by doing without a monitor and speakers.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

ANALYSIS

If you're only buying a system case, where should you look for peripherals?

It may be that you're buying a system-only PC to replace a current model, and that you're happy with your monitor and speakers. If this is the case, you have no worries. It's possible, though, that you simply want to avoid a system builder choosing your products for you. If you want the best peripherals for your buck, you need to know where to look. That's where we come in.

In terms of displays, you really have two main choices. CRT monitors are pretty much dead, and 15in LCDs are heading that way too. This leaves 17in and 19in TFT-based models as your best options. The decision basically comes down to price. Obviously, a 19in display gives you more real estate to play with, and they often come with more extras, such as USB hubs or decent speakers. They do cost around £200 more than most 17in offerings, though. The lists below show the best buys in each category.

17in Monitors:

ADI i700, £351,

www.savastore.com (PC Plus 218)

Viewsonic VG710s, £335,

www.savastore.com (PC Plus 216)

19in Monitors:

Sony SDM-X93, £516,

www.dabs.com (PC Plus 216)

Sharp LL-T19D1-B, £490,

www.microlandtechnology.com (PC Plus 216)

For speakers, your choice is a little more complicated. Audio manufacturers would have you believe that everybody needs a 7.1 or 5.1 surround sound system. For most computer applications, though, stereo is more than enough. Here are our recommendations:

Stereo Speakers:

Videologic ZXR-200, £34,

www.savastore.com

Creative Megaworks 2.1 250D, £96,

www.savastore.com

5.1 Speakers:

Videologic ZXR-550, £55,

www.simply.co.uk

Logitech Z-680, £234, www.simply.co.uk

7.1 Speakers:

Creative Gigaworks S750, £254,

www.microlandtechnology.com

Videologic ZXR-750, £85,

www.savastore.com



BEST VALUE

Carrera SSC Zenith ZNF3-150

PRICE £1,056 (£899 ex VAT)

SUPPLIER Carrera SSC 0871 222 3456

INFO www.carrera.co.uk

Some of you may be surprised that we haven't picked one of the group's cheaper systems as this month's Value Award winner. Carrera SSC, though, has managed to include the same parts as most of its rivals, and so avoid compromising on performance, while also bundling an excellent warranty deal. That's well worth a gong in our book.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



BEST PERFORMER

Tiny.Com Tornado 3400-64 XL

PRICE £1,056 (£899 ex VAT)

SUPPLIER Tiny.Com 0870 830 3156

INFO www.tiny.com

If we're completely honest, the Evesham machine is this month's top performer as well. Tiny's Tornado, however, is superb in second place, and with the Axis 64 taking the Editor's Choice Award, the 3400-64 XL thoroughly deserves to pick up one of the silver medals. 400GB of storage space, made up of two Western Digital ATA-133 drives, is a real standout feature.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

PCPlus HARDWARE LAB TEST

→ We check out the output from 17 mono laser printers



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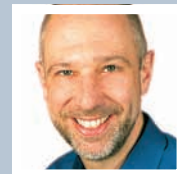
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Matthew Richards

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Matthew started work as a broadcast engineer with the BBC, and for the last 12 years he's been writing for PC Plus and other Future titles

Editor's Choice

Our top award for products that combine exceptional performance and quality with superb value for money

Performance Award

Awarded to products that excel in our performance and quality tests, where money is less important

Value Award

Awarded to products that represent outstanding value for money, giving you more bangs per buck

Set lasers to stunning

Few things in computing are black and white, says **Matthew Richards**. Apart, that is, from the crisp mono output of an efficient laser printer

The paperless office is a myth. While the proliferation of web pages and email correspondence has finally brought about a slight decline over the last year in the number of pages printed by the average office, the need to output words and pictures onto sheets of paper is as great as it has ever been. And for the small or home office, the mono laser printer has more going for it than ever before.

Think 'laser printer' and you're probably thinking about that big, ugly grey box stashed away in the corner of the office, grimy with age and neglect. Inkjets have since become a sexier, affordable alternative. But part of the problem with inkjets is that they're high-maintenance items, and you need to feed them with expensive cartridges on an alarmingly regular basis. That's

not good business practice. Even the smallest businesses require efficiency. What they want is a printing tool that quietly gets on with its work, with as little user input as possible. Time spent maintaining a printer is, in the vast majority of cases, time wasted.

Trying to extract a replacement cartridge from the office stationery department can be like extracting teeth at best, and getting blood out of a stone at worst. Compare this with the simple task of slotting in a laser toner cartridge just once every 3,000 or so prints, and the laser printer already looks a better option. Now consider that even mono inkjet pages can be as much as five times as expensive for every sheet you print, and the laser is home and dry.

So all that remains is for you to choose the best model for your personal printing needs. With prices running from under £100 to £250, there are plenty of lasers to choose from, and here we round up some of the best.



Kyocera Mita FS-1020D
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How we tested

Our reviews tested the all-round capabilities of each printer and assessed the running costs

To test the print quality of the laser printers, we printed test mono text pages using a variety of typefaces and sizes, ranging from bold, heavy lines to thin italic serifs. All printers were checked for their ability to produce solid black areas, while outputting the finest detail with sharp definition. We also tested for quality on mixed graphics and text DTP pages, and photo output. Streaking pale lines across the print can be caused by imperfections in the photoconductive drum and toner handling abilities of the printer, so this was checked for as well.

When it came to speed, as well as checking that the lasers were true to their maximum quoted 'pages per minute' output for multi-page documents, we also measured the time for that all-important 'first page' output. These times can be doubled if the printer has to warm up its fuser section (for baking toner powder and fixing it onto the page) from standby mode. Many laser printers claim to have 'instant-on' fuser sections, which take little or no time to warm up from standby mode. To check the speeds in real terms, we left the printer after printing a test page for 30 minutes, and then we timed how long it took to output a mono text page. DTP output, and especially photo output, took considerably longer to print on some lasers

than others, so we printed an 8x10in photo in high quality print mode on all the printers as well.

Another crucial feature for all businesses to consider is the running cost of the printer. Some lasers have their print drum built into the toner cartridge, so this is replaced every 5,000 prints or so, when the toner runs out. Others have a separate print drum, which is replaced independently every 20,000 pages or so. In the features table (pgs 104/105) you'll find the combined running costs for both print drum and toner, based on the standard level of five per cent toner coverage. ■



The mono output quality of a colour photo as well as a variety of text printing were among the tests used in examining the printers.

BROTHER HL-5130

INFORMATION

PRICE £158 (£134 ex VAT)

SUPPLIER Brother 0870 830 4000

INFO www.brother.co.uk

Cost: 1.3p per page

PCPlus ratings

BROTHER HL-5130

Value ○○○○○○○○●○

Features ○○○○○○○○●○

Performance ○○○○○○○○●○

OVERALL 7

The Brother HL-5130 has 'office' written all over it. Robust build quality and the lack of any overhanging paper input or output trays mean that everything's tough and well contained. It's also bigger and heavier than most of the printers on test here, adding to the 'serious office use' feel. Better still is the monster toner cartridge, which is good for 6,700 A4 pages at the usual five per cent coverage. This is nearly three times as many pages as some of the printers on test are capable of.

The print drum is purchased separately from the toner cartridge but, even combining the two, running costs work out at a meagre 1.3p per sheet, and that's without resorting to the Toner Saver mode, which makes things even more frugal, but at the cost of poorer

though still very readable print quality.

Input and output trays are generous at 250 and 150 sheets respectively, and there's an additional tray for specialist media. The only thing that's slightly lacking is the 8MB of printer memory, which wasn't enough to output our 8x10in test photo at the maximum 1,200dpi. At 600dpi, the print quality was a bit streaky compared with the pristine output of almost all the other printers on test. First page print from standby can also be a bit slower than Brother's quoted 10 seconds – we measured 23 seconds in



our tests, after leaving the printer to stand for half an hour.

USB and parallel ports come as standard, with an optional Ethernet pack for networking. For a personal or small workgroup printer, the baby Brother is wonderfully cheap to run, making it a great buy if that's your main concern.

BROTHER HL-5150D

INFORMATION

PRICE £222 (£189 ex VAT)

SUPPLIER Brother 0870 830 4000

INFO www.brother.co.uk

Cost: 1.3p per page

PCPlus ratings

BROTHER HL-5150D

Value ○○○○○○○○●○

Features ○○○○○○○○●○

Performance ○○○○○○○○●○

OVERALL 8

From the outside, the Brother HL-5150D looks identical to the cheaper HL-5130, but it packs a bit more of a punch under its plastic bonnet. Crucially, while the 5130 is limited to its standard fit of 8MB RAM, the 5150D comes with 16MB installed and is upgradeable up to 144MB using a single industry-standard DIMM (100-pin Dual In-line Memory Module) slot. This means that, unlike the HL-5130, the printer was able to output our 8x10in test photo in maximum 1,200dpi resolution. The photo quality was also much better, with no streaking, which was surprising as the HL-5150D uses exactly the same toner cartridge and drum as the cheaper 5130 model.

High-quality status monitoring and control software make both Brother

printers a joy to use. The interactive help menu is particularly good, keeping a check on paper jams, low toner, duplex errors and so on. You also get notification of when the drum will need changing and even if a service call is needed, and some of this is backed up on the printer itself. As another example of how both printers try to help out, if you try and print a page that overfills the memory, you get notification of the problem on screen, and the printer also prints the page at a lower resolution, complete with a second sheet to explain what it's done and why.



Compared with the 5130, the 5150D also offers a faster output of around 20ppm and has various printer emulations built in. These include PostScript as well as PCL 6 and Epson and IBM printer languages. Overall, the increased facilities and memory options make it worth the extra cash.

CANON Laser Shot LBP-1120

INFORMATION

PRICE £116 (£99 ex VAT)
SUPPLIER Canon 0800 61 6417
INFO www.canon.co.uk

Cost: 1.8p per page

PCPlus ratings

CANON LASER SHOT LBP-1120

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 6

The curvy Canon is as far removed from traditional boxy laser printers as chalk is from cheese. Typically for Canon, a lot of thought has been put into the looks of the LBP-1120 as well as the performance. Unfortunately, the clean lines have led to compromises in the usefulness of the printer overall. For example, instead of a conventional high-capacity paper input tray, you get an inkjet-style paper feed where you drop pages into the back of the printer. As the maximum input capacity is just 125 sheets of A4, you will probably need to top up your supplies more often than you would like.

At the other end of the printing cycle, the output options enable straightforward face-up output, or face-down output into the 50-sheet output

tray. Again, it's less of a tray and more of a slot built into the top of the printer. At least it makes grabbing pages easy if you're in a rush. The 10ppm speed of the printer is pretty sluggish, when you think that many of the latest inkjets can output mono pages at over 20ppm. On the plus side, Canon's instant-on fuser section means you never have to wait more than 19 seconds for that all-important first page.

The printer driver is up to Canon's typically-high standards of intuitive and easy operation. One thing you might want to make a beeline for is the



dialog box, which switches off voiced announcements to tell you when printing has started and finished, as this can become supremely annoying - very quickly. Niggles aside, the LBP-1120 delivers good print quality for both text and graphics, but it isn't the fastest or best value printer available.

CANON Laser Shot LBP-3200

INFORMATION

PRICE £195 (£166 ex VAT)
SUPPLIER Canon 0800 61 6417
INFO www.canon.co.uk

Cost: 1.8p per page

PCPlus ratings

CANON LASER SHOT LBP-3200

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 6

Like the slower Canon on test here, the new LBP-3200 has a stylish design and small form factor, even if the primary paper input tray sticks out quite a way behind the main body of the printer. But at least it has a 'proper' paper tray, with a capacity of up to 250 sheets of A4. The output tray is also larger, with a 100-sheet capacity. There's also a manual feed slot in the front of the printer, with paper guides that close down to just 2.5 inches.

Other similarities with the LBP-1120 include an instant-on fuser, which cuts the wait for first page output from standby. However, the 3200 reduces the wait even more due to its much faster 18ppm performance, and a first page print time of eight seconds. A more generous 2MB memory allocation adds

further to the printer's attributes, although it retains the same maximum 600dpi resolution. On both models, an 'automatic image refinement' system boosts this to an equivalent 2,400dpi for top-quality printing.

There's little to choose between the print qualities of the two Canons. Both offer clean, crisp output in normal mode, while 'Toner Saver' settings are also pretty reasonable, especially compared to the overly-grey output of some printers in this mode. Running costs are also identical, and a little high, at around 1.8p per print based on 2,500



pages from a toner cartridge, which also includes a built-in print drum.

The LBP-3200 is about £80 more expensive than the cheaper Canon, but we think it's worth it for the faster print performance and higher-capacity paper handling. However, it's not the best value mono laser printer around.

EPSON EPL-6200

INFORMATION

PRICE £237 (£202 ex VAT)
SUPPLIER Epson 0870 241 6900
INFO www.epson.co.uk

Cost: 1.7p per page

PCPlus ratings

EPSON EPL-6200

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 8

The Epson EPL-6200 feels like a high-quality piece of kit. Build quality is excellent, everything fits together with reassuring clunks, and the printer is very robust throughout, ensuring it should stand up to the rigours of office life. The driver software is equally good, with an excellent preferences interface and status monitor. You can also print a sheet of all the printer set-up settings and installed options with a single press of the 'i' information button on the printer itself.

In spite of being a comparatively fast 20ppm printer, the Epson certainly wasn't the quickest off the mark from stand-by mode. Once warmed up, however, a 'first page' print only takes about eight to 10 seconds, and the subsequent quality is excellent, with

razor sharp fonts and solid blacks.

The EPL-6200 uses a separate photoconductor drum as well as the toner cartridge. This has the potential for cheaper running costs but, using the standard 3,000-page toner cartridge, page costs can work out to a whopping 3.3p. If you opt for the high-yield, 6,000-page cartridge and shop around a bit, you can bring this down to a much more respectable 1.7p per page. Use of the Toner Saver setting can drive costs even lower, but the print quality is dire to say the least.

The EPL-6200 handles PostScript in



addition to standard Windows printing, and optional extras include an automatic duplex paper feed for £93 as well as network connectivity. The overall quality makes the Epson worth the purchase price, but you have to be careful about which consumables you buy to keep the running costs down.

HP LaserJet 1012

INFORMATION

PRICE £159 (£135 ex VAT)
SUPPLIER HP 0845 270 4222
INFO www.hp.com/uk

Cost: 2.5p per page

PCPlus ratings

HP LASERJET 1012

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 8

One up in the HP LaserJet range from the slower 1010 model, which retails for just under £100, the 1012 offers 14ppm printing as opposed to 12ppm and a higher maximum resolution of 1,200dpi instead of 600dpi. In all other respects, the two printers are pretty much identical. The 1012 actually offers a true optical resolution of only 600dpi, but this is bumped up to a 1,200dpi effective resolution, courtesy of HP's proven Resolution Enhancement technology (REt) and FastRes.

For £159, you're buying into the legendary reliability of the HP LaserJet range and, while the baby 1012 is much smaller than its older, bigger office-based brothers, the build quality seems just as good. The printer driver is of an equally high standard, offering lots of

options, including manual duplex printing and toner saving, which reduces cartridge costs by up to 50 per cent. The quality in 'economy' mode isn't nearly as good as in the 'normal' mode but is certainly far better than the Epson printer and almost on a par with the Canon. If you're on a small peer-to-peer network, especially as part of Windows XP's workgroup facilities, the HP's set-up is excellent for sharing the printer.

Adding to the small size and quiet running of the LaserJet, the instant-on fuser section means you can always



expect printouts quickly. HP claims 'less than 10 seconds', and it turned out to be around 12 seconds from stand-by in our tests, after leaving the printer idle for about an hour. For the money, the 1012 offers great results and is simple to run but, as with the 1015 model, toner costs are expensive.

HP LaserJet 1015

INFORMATION

PRICE £194 (£165 ex VAT)
SUPPLIER HP 0845 270 4222
INFO www.hp.com/uk

Cost: 2.5p per page

PCPlus ratings

HP LASERJET 1015

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 8

The LaserJet 1015 looks all but identical to the 1012, but has an extra couple of tricks up its sleeve. Built around the same 133MHz RISC processor, the 1015 adds an extra 8MB of memory, bringing the total up to 16MB (both printers have non-expandable memory). You don't notice any increase in speed for general text printing, but there's a performance increase in DTP and photo printing.

This is most noticeable when using HP's built-in Resolution Enhancement technology (REt) to boost the optical resolution from 600dpi to an effective 1,200dpi output. In our tests, printing an 8x10in photo at 1,200dpi in maximum quality, the 1015 outputted the page in 28 seconds, as opposed to 41 seconds on the 1012 – quite a saving in time.

The combined toner cartridge and imaging drum is incredibly easy to replace, but it's expensive. As with the 1012, running costs work out to a pricey 2.5p per page, based on the usual five per cent coverage. Other extras with the 1015 include PCL 5 emulation as well as host-based printer language support and, importantly for serious office work, the 1015 is Windows NT compatible, rather than just offering support for Windows 95 through to XP.

The final notable difference between the 1012 and the 1015 is that the 1015



offers optional Ethernet connectivity, and connectivity packs are available for wireless and Bluetooth networking. This makes the 1015 a very well-connected printer, as well as being a thoroughly reliable piece of kit. However, the comparatively high running costs make it most suitable for low volume printing.

HP LaserJet 1300

INFORMATION

PRICE £245 (£209 ex VAT)
SUPPLIER HP 0845 270 4222
INFO www.hp.com/uk

Cost: 1.6p per page

PCPlus ratings

HP LASERJET 1300

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 9

Compared to the two cheaper LaserJets in our group test, the 1300 has a hefty price tag of £245. However, you get a much better spec for the extra money, and you could soon find yourself reclaiming the extra pounds. Whereas the LaserJet 1012 and 1015 have running costs in terms of toner cartridges of about 2.5p per page, the 1300 has a 'high-capacity' toner cartridge that sells for around £65. With enough toner for 4,000 prints, based on five per cent coverage, that's almost a penny cheaper for every page you output. A standard, 2,500-page cartridge is also available, but that puts running costs back up to just over 2p per print.

The 1300 looks more businesslike than either of the smaller HP printers, and has a much more purposeful set

of specifications. The always-on fuser facilitates first page printouts in just eight seconds, and speeds up to 19ppm for multi-page documents. In our tests, HP's speed claims were true to their word, and even high-resolution 8x10in photos printed in just under 10 seconds.

While the 1300 is a high-quality printer straight out of the box, there's a range of optional extras as well. These include connectivity packs for Ethernet, Bluetooth and wireless networking, plus an extra 250-sheet input tray to double the input capacity. There's also

a three-year support pack available, with 'next business day response'.

In both normal and high-quality settings, the 1300 churned out page after page of flawless printouts in our tests, reproducing the finest lines of small fonts and making a great job of greyscale graphics. A top buy all round.



KONICA MINOLTA PagePro 1250e

INFORMATION

PRICE £205 (£174 ex VAT)

SUPPLIER Konica Minolta
01784 44 2255

INFO <http://konicaminolta.co.uk>

Cost: 1.6p per page

PCPlus ratings

**KONICA MINOLTA
PAGEPRO 1250E**

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 8

Small enough to fit on your desk, the PagePro 1250e is nothing if not compact. However, the space-saving attributes are accompanied by a little flimsiness in construction, with rather puny face-up and face-down output trays. Evidence of their lack of ruggedness was amply demonstrated by the fact that one of the main output tray's fixing points was already broken off when we got it out of the box.

For such a small printer, the 1250e packs a hefty punch, with 16MB of memory fitted as standard and up to 144MB available as an add-on via the single DIMM expansion slot. A large 15,000 pages-per-month claimed duty cycle reinforces the view that this printer means business, and there's also an optional 500-sheet bottom input tray to

replace the standard 250-sheet feeder.

Alternative print languages are well catered for, with PCL 5e, PCL 6 and PostScript installed as standard. Print quality is very good in all modes, both for regular text printing and high-quality, 1,200dpi graphics. Running costs are also reasonable, especially if you go for the high-capacity, 6,000-page toner cartridge, which offers much better value than the 3,000-page unit. On top of that, there's a print drum to replace, but only after about 20,000 prints.

The warm-up time from stand-by is



pretty short, and after leaving the printer for half an hour we got a first page print time of 15 seconds. If the fuser section is already up to temperature this drops to 13 seconds for a mono text page, and speeds are similar for DTP pages. This is a quality printer, but its fragility makes it suitable only for the home office.

KONICA MINOLTA PagePro 1300W

INFORMATION

PRICE £89 (£76 ex VAT)

SUPPLIER Konica Minolta
01784 44 2255

INFO <http://konicaminolta.co.uk>

Cost: 1.6p per page

PCPlus ratings

**KONICA MINOLTA
PAGEPRO 1300W**

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 8

The small PagePro 1300W can get even smaller thanks to its neat, foldaway paper trays. The disadvantage of this is that you only get a single input tray, which makes feeding envelopes and specialist media a bit of a chore. You get a great spec for £89, even though processor speed and memory aren't overly generous. Still, the 8MB of RAM is enough to utilise the 1,200x1,200dpi maximum 'fine-art' print resolution on half-page prints. Full-page photos will see you running into memory problems, and you can't fit more than the standard 8MB.

Surprisingly, the 1300 is almost as fast as the PagePro 1250e, which is more than twice the price, for text printing. However, it's very slow for high-quality photo and graphics printing – 48

seconds in 600x600dpi mode and 53 seconds for higher quality 1,200x600dpi.

Considering the low purchase price, consumables are very reasonable. A 6,000-page toner cartridge costs £77 and the 20,000-page print drum costs £58, so running costs work out to about 1.6p per print. That's as good as or better than most of the printers on test, and under half the price of the Epson.

A handy status monitor flashes up on screen when the paper runs out, or something else goes wrong. However,



this remained strangely absent when we tried to print pages that exceeded the memory's capability, with only an Error lamp on the printer itself giving the game away. Niggles like these, and the fact that the PagePro 1300W can be quite noisy, aside, the print quality and running costs make it a very good buy.

KYOCERA MITA FS-1020D

INFORMATION

PRICE £244 (£208 ex VAT)

SUPPLIER Kyocera Mita
0845 710 3104

INFO www.kyoceramita.co.uk

Cost: 0.8p per page

PCPlus ratings

KYOCERA MITA FS-1020D

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 9

Based on Kyocera's Ecosys system, the FS-1020D has class-leading economy in terms of running costs. The main print drum and developer unit is built to last for at least 100,000 pages and Kyocera guarantees it for this number, or from three years from purchase, whichever occurs sooner. So all you need to worry about, at least in terms of the running costs, are the relatively inexpensive toner cartridges, which last for 7,200 prints (at five per cent coverage) and cost £58. That works out at just 0.8p per page.

Further boosting efficiency, the FS-1020D comes with automatic duplex paper handling as standard, so you can use both sides of the page for multi-page or booklet printing. Options include a 250-sheet input tray, which works in

conjunction with the standard 250-sheet main tray and 50-sheet 'multi-purpose' tray. On top of standard workgroup printing, a variety of network cards are available.

Printing quality is exemplary for simple text printing, and for graphics and photos. Another nice touch is the optional CompactFlash card reader, which you can use to store forms, fonts, macros, signatures and logos, while AES (Automatic Emulation Sensing) caters for printer languages including PCL 5e, PCL 6 and PostScript.

Overall speed is the fastest of any



printer on test here, with a full 20ppm output. Warm-up time is a mere 15 seconds from switch-on, while first page output is normally achieved in just 10 seconds. All in all, the Kyocera is a fabulous printer, which offers great quality output and superbly-low running costs.

LEXMARK E321

INFORMATION

PRICE £182 (£155 ex VAT)
SUPPLIER Lexmark 0870 444 0044
INFO www.lexmark.co.uk

Cost: 1.9p per page

PCPlus ratings

LEXMARK E321

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 7

If you want a laser printer that's not built in beige, you'll have your work cut out finding one. Breaking the colour mould of what somebody, at some point, decided office equipment should never deviate from, the Lexmark E321 has a dark grey livery, which makes a refreshing change. It's no slouch either, with a speed of 19ppm, making it one of the fastest printers on test. First page print time was equally impressive, clocking at 11 seconds in our tests, with only three seconds longer needed from standby.

The standard 8MB memory allocation isn't overly generous, and it's not quite enough to print a full-page photo at the printer's maximum resolution of 1,200dpi 'image quality' setting. However, if you plan to print

full-page photos on a regular basis, you can add extra memory in a single module of 8, 16, 32 or 64MB.

The E321's print quality is also very good and Ethernet and TokenRing network adaptors are available as optional extras. You can also extend the maximum input capacity from 150 sheets to 400 with an optional second paper tray.

The only real negative is Lexmark's usual Achilles heel: running costs. The high-yield toner cartridge, complete with print drum, costs £112 and is good for 6,000 pages. It offers the best value,



which works out to 1.9p per page, right at the high end of the scale for personal lasers. If you opt for the standard cartridge, which lasts around 3,000 pages and costs £69, the average page cost jumps to 2.3p, which is pretty poor. Overall, the Lexmark's speed makes it good value to buy, but not to run.

OKIPAGE B4300

INFORMATION

PRICE £233 (£198 ex VAT)
SUPPLIER Oki 0800 917 6015
INFO www.oki.co.uk

Cost: 1.2p per page

PCPlus ratings

OKIPAGE B4300

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 9

The Oki B4300 is up at the top end of the price bracket, but you certainly get what you pay for. Standalone, local installation, via Windows Plug & Play or workgroup network installation via the Oki set-up CD are both equally quick and easy, as is fitting the toner cartridge. Your first print should take less than a couple of minutes. Other nice features which are rare in the personal laser category include a full LCD status screen with on-board controls for adjusting all print settings, including two levels of Toner Saver economy printing.

Although the Toner Saver modes still give adequate draft output, you'll probably want to stick to the Oki's excellent quality in normal and fine art modes, due to the cheap running

costs. A 6,000-page toner cartridge costs just £46 and, for more occasional users, the smaller 2,500-page cartridge is a mere £21. The only other consumable item is the standalone print drum, which is good for 25,000 prints and costs £106 to renew. All in all, you're looking at a very frugal 1.2p per print.

We couldn't get down to Oki's claimed 6.2 seconds for first page output, but 11 seconds from standby is still very quick, and nine seconds once warmed up is equally impressive. The really nice thing about the printer,



however, is the way it can grow to keep pace with your needs. A range of optional extras include a second paper input tray, offering an extra 500-sheet feeder, Fast Ethernet card, PostScript options, and extra memory. It's a great printer in every respect, and well worth the price.

PANASONIC KX-P7305

INFORMATION

PRICE £229 (£195 ex VAT)
SUPPLIER Panasonic 0870 156 5566
INFO www.panasonic.co.uk

Cost: 1.5p per page

PCPlus ratings

PANASONIC KX-P7305

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 8

With most things electronic, if there's a Panasonic badge on the front, you can bet the quality is pretty good. The KX-P7305 is no exception. For its size and price, the printer has a lot going for it as supplied, and there are some useful optional extras on tap.

Out of the box, the Panasonic has a useful 250-sheet main input tray and single-sheet priority feeder. There's 16MB of RAM built in, and you get both PCL 6 and PostScript emulation as standard. For an extra £159 you can add a second, 550-sheet paper tray, to boost the total input capacity to 800 sheets, and memory is expandable to either 32MB or a maximum of 48MB.

The printer isn't the quickest around in terms of warm-up time, outputting the first text page from standby in 15

seconds. Once up to temperature, the first page time drops to 12 seconds for text and 14 seconds for a mixed text and graphics DTP page. The maximum speed is a potentially impressive 18ppm but, in our tests, the Panasonic was very slow for photo printing. At the maximum resolution of 1,200x 600dpi it took a lengthy 69 seconds to print our 8x10in test picture but surprisingly, at the lower resolution of 600x600dpi, the printer was just as slow.

Print quality is extremely good all round, however, so you shouldn't



have any worries in that respect. The toner cartridges and print drum are replaceable separately, with running costs working out to around 1.5p per print. The KX-P7305's main claim to fame, however, is that it offers fully automatic duplex printing, which is a real luxury at this price.

SAMSUNG ML1750

INFORMATION

PRICE £159 (£135 ex VAT)
SUPPLIER Samsung Electronics
 01932 45 5000
INFO www.samsungelectronics.co.uk

Cost: 1.9p per page

PCPlus ratings

SAMSUNG ML1750

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 7

Personal laser printers don't come much more personal than the ML1750. It's very compact, and smaller than many A4 inkjet printers. Set-up is simple, but still enables a full range of PC-based status monitoring and printing controls as optional extras to the basic printer driver.

Media handling includes some handy options. Apart from the main 250-sheet input tray, there's a single-sheet input facility with easily-adjustable paper guides that shrink from A4 width to three inches, ideal for loading envelopes or 3x5in cards. For thicker card, you can divert the turnover output for face-down stacks of up to 50 sheets for single output face-up pages. This is good for avoiding jams. There's also a mechanical lever, which shows

roughly how many pages are left in the main input tray.

Print quality is pretty good for regular text output and greyscale images. For optimum resolution when printing graphics or photos you can switch from normal 600dpi output to 1,200dpi for even sharper images, although the 8MB non-upgradeable memory won't allow for full-page graphics printing in this mode. If cost is more important, there's also a 'Toner Saver' setting which you can activate from the printer driver or by pressing the single control button on the printer



itself. This can save you around 40 per cent in the amount of toner laid on the page, but output quality tends to suffer.

The ML1750 is easy to use, and it's easy to replace of the 3,000-page toner cartridge, which also includes the main print drum. Overall, it's a decent printer, but no more and no less than this.

TALLY T9220

INFORMATION

PRICE £276 (£235 ex VAT)
SUPPLIER Tally 0800 652 4556
INFO www.tally.co.uk

Cost: 1.3p per page

PCPlus ratings

TALLY T9220

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 9

Weighing in at 13.5Kg, this big Tally printer is twice as heavy as the tiny Canon and Samsung lasers. With the bulk, however, comes a great range of specs, plus an automatic duplex printing option (more on this later).

Another contributing factor to the Tally's size is a far larger than average, 500-sheet main input tray, plus a 100-sheet secondary tray, both of which come as standard. There's a superb selection of control buttons, doubling up on what's available from the printer driver, and enabling an excellent menu system via a backlit LCD display.

The Tally may be expensive to buy, but it's cheap to run. The combined print drum and toner cartridge costs £104, but lasts for 8,000 pages. That works out at just 1.3p per page, and a

lot of time saved by only changing the toner cartridge once every other blue moon. The running costs are reduced further by the duplex printing option, available from the PC driver interface or by simply pressing a button on the printer itself. This enables fully automatic printing on both sides of the paper, potentially halving your paper costs.

Standard kit includes a generous 16MB of memory – enough to print a full-page photo in 1,200dpi maximum resolution. Options enable this to be taken up to 80MB of memory, and



there's a full Ethernet kit available too.

The Tally is very quiet in use, and provides excellent-quality mono and greyscale output. The warm-up time from standby is a slow 30 seconds but, if you want high volume and duplex printing, it's well worth the relatively high initial outlay.

XEROX Phaser 3130

INFORMATION

PRICE £257 (£219 ex VAT)
SUPPLIER Xerox 0870 873 4519
INFO www.xerox.co.uk

Cost: 1.9p per page

PCPlus ratings

XEROX PHASER 3130

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 5

If you're reading these reviews in alphabetical order, stand by for a case of déjà vu. The Xerox Phaser 3130 looks all but identical to the Samsung ML1750, being built into the same case. So we won't repeat ourselves concerning all the media-handling features and options – you can get all those from the Samsung review. Let's concentrate on the differences instead.

The main advantage of the Xerox over the Samsung is that it has 32MB of memory fitted instead of 8MB. This is a big factor, since the total memory installed is not upgradeable. A 32MB installation of RAM means that you can make the most of the 1,200dpi print engine for photo and graphics output, for up to full-page printing, whereas you're limited to about half a page

on the Samsung. However, the quality doesn't look much better, and you have to wait 44 secs for the page, rather than 13 secs in the Samsung's 600dpi setting – not really worthwhile.

In other areas, the performance of the Xerox was notably slower than the Samsung. First page mono text printing and DTP output both came out second-best, and the warm-up time after 30 minutes on stand-by was a lengthy 32 seconds, as opposed to the Samsung's 22 seconds. This makes the Xerox one of the slowest printers on test in this respect.



All things considered, the Xerox simply isn't enough of an improvement over the Samsung to make it worth the extra £100. As a highly-compact, efficient printer with reasonable running costs it's a good piece of kit, but the Samsung is by far the better value choice.

FEATURES TABLE

DETAILS

Manufacturer & Model	Brother HL-5130	Brother HL-5150D	Canon LBP-1120	Canon LBP-3200
Price	£158 (£134 ex VAT)	£222 (£189 ex VAT)	£116 (£99 ex VAT)	£195 (£166 ex VAT)
Supplier	0870 830 4000	0870 830 4000	0800 61 6417	0800 61 6417
Info	www.brother.co.uk	www.brother.co.uk	www.canon.co.uk	www.canon.co.uk

TECHNOLOGY

Max Resolution (dpi)	1,200	1,200	600	600
Memory/Max memory (MB)	8/8	16/144	512KB/512KB	2/2

PRINT SPEEDS

Nominal max speed	17ppm	20ppm	10ppm	18ppm
First page print time (from standby)	23s	20s	19s	8s
A4 mono text page speed	10s	9s	18s	10s
A4 graphics and text test speed	10s	9s	19s	10s
10x8 inch photo test speed (high quality)	11s	10s	19s	10s

MEDIA HANDLING AND FONTS

Main input tray capacity	250 sheets	250 sheets	125 sheets	250 sheets
Priority input tray capacity	1 sheet	1 sheet	1 sheet	1 sheet
Output tray capacity	150 sheets	150 sheets	50 sheets	100 sheets
Duplex printing	Manual	Manual	No	No
Printer language	GDI	PCL 6, Epson, IBM	CAPT	CAPT
Postscript	No	Yes	No	No

RUNNING COSTS

Cartridge price	£58	£58	£44	£45
Estimated pages per cartridge	6,700	6,700	2,500	2,500
Print drum price	£88	£88	In toner cartridge	In toner cartridge
Estimated pages per print drum	20,000	20,000	2,500	2,500
Overall cost per page	1.3p	1.3p	1.8p	1.8p

INTERFACE AND CONNECTIVITY

USB/Parallel/Ethernet	Yes/Yes/Optional	Yes/Yes/Optional	Yes/No/No	Yes/No/Optional
Wireless	No	No	No	No

PHYSICAL SPECIFICATIONS

Dimensions (WxDxH)mm	382x383x252	382x383x252	362x307x240	380x396x245
Weight (Kg)	10.5	10.5	6.7	6.8
Noise level (dBA)	30-50	30-50	Ambient-62	Ambient-62

PCPlus verdict 7

PCPlus verdict 8

PCPlus verdict 6

PCPlus verdict 6

DETAILS

Manufacturer & Model	Epson EPL-6200	HP LaserJet 1012	HP LaserJet 1015	HP LaserJet 1300
Price (ex VAT)	£237 (£202 ex VAT)	£159 (£135 ex VAT)	£194 (£165 ex VAT)	£245 (£209 ex VAT)
Supplier	0870 241 6900	0845 270 4222	0845 270 4222	0845 270 4222
Info	www.epson.co.uk	www.hp.com/uk	www.hp.com/uk	www.hp.com/uk

TECHNOLOGY

Max Resolution (dpi)	1,200	600/1,200	600/1,200	1,200
Memory/Max memory (MB)	8/136	8/8	16/16	16/80

PRINT SPEEDS

Nominal max speed	20ppm	14ppm	14ppm	19ppm
First page print time (from standby)	17s	12s	12s	8s
A4 mono text page speed	12s	12s	12s	8s
A4 graphics and text test speed	12s	12s	12s	8s
10x8 inch photo test speed (high quality)	15s	19s/41s	14s/28s	10s

MEDIA HANDLING AND FONTS

Main input tray capacity	250 sheets	160 sheets	160 sheets	250 sheets
Priority input tray capacity	10 sheets	10 sheets	10 sheets	10 sheets
Output tray capacity	100 sheets	125 sheets	125 sheets	125 sheets
Duplex printing	Optional	Manual	Manual	Manual
Printer language	ESC, PCL	Host-based	PCL 5	PCL 5e, PCL 6
Postscript	Yes	No	No	Yes

RUNNING COSTS

Cartridge price	£80	£50	£50	£65
Estimated pages per cartridge	6,000	2,000	2,000	4,000
Print drum price	£65	In toner cartridge	In toner cartridge	In toner cartridge
Estimated pages per print drum	20,000	2,000	2,500	4,000
Overall cost per page	1.7p	2.5p	2.5p	1.6p

INTERFACE AND CONNECTIVITY

USB/Parallel/Ethernet	Yes/Yes/Optional	Yes/No/No	Yes/Yes/Optional	Yes/Yes/Optional
Wireless	No	No	Optional	Optional

PHYSICAL SPECIFICATIONS

Dimensions (WxDxH)mm	407x436x261	370x230x208	370x230x208	415x486x241
Weight (Kg)	7.8	5.9	5.9	8.6
Noise level (dBA)	39-54	6.2-57	6.2-57	6.3-57

PCPlus verdict 8

PCPlus verdict 8

PCPlus verdict 7

PCPlus verdict 9

DETAILS				
Manufacturer & Model	Konica PagePro 1250e	Konica PagePro 1300W	Kyocera Mita FS-1020D	Lexmark E321
Price (ex VAT)	£198 (£169 ex VAT)	£89 (£76 ex VAT)	£244 (£208 ex VAT)	£182 (£155 ex VAT)
Supplier	01784 44 2255	01784 44 2255	0845 710 3104	0870 444 0044
Info	http://konicaminolta.co.uk	http://konicaminolta.co.uk	www.kyoceramita.co.uk	www.lexmark.co.uk
TECHNOLOGY				
Max Resolution (dpi)	1,200	1,200	1,200	1,200
Memory/Max memory (MB)	16/144	8/8	16/272	8/72
PRINT SPEEDS				
Nominal max speed	16ppm	16ppm	20ppm	19ppm
First page print time (from standby)	15s	17s	14s	14s
A4 mono text page speed	13s	16s	10s	11s
A4 graphics and text test speed	13s	18s	10s	11s
10x8 inch photo test speed (high quality)	14s	53s	12s	12s
MEDIA HANDLING AND FONTS				
Main input tray capacity	250 sheets	150 sheets	250 sheets	150 sheets
Priority input tray capacity	10 sheet	None	50 sheets	1 sheet
Output tray capacity	100 sheet	100 sheets	250 sheets	100 sheets
Duplex printing	Manual	Manual	Automatic	No
Printer language	PCL 5e, PCL 6	Windows	PCL 5, 6, Epson, IBM	PCL 5e
Postscript	Yes	No	Yes	No
RUNNING COSTS				
Cartridge price	£77	£77	£58	£112
Estimated pages per cartridge	6,000	6,000	7,200	6,000
Print drum price	£58	£58	N/A	In toner cartridge
Estimated pages per print drum	20,000	20,000	100,000	6,000
Overall cost per page	1.6p	1.6p	0.8p	1.9p
INTERFACE AND CONNECTIVITY				
USB/Parallel/Ethernet	Yes/Yes/No	Yes/Yes/No	Yes/Yes/Optional	Yes/Yes/Optional
Wireless	No	No	Optional	No
PHYSICAL SPECIFICATIONS				
Dimensions (WxDxH)mm	389x441x259	385x405x340	378x375x235	391x361x221
Weight (Kg)	70	78	10.5	90
Noise level (dBA)	30-62	35-54	32-53	30-49
PCPlus verdict 7		PCPlus verdict 8	PCPlus verdict 9	PCPlus verdict 7

DETAILS					
Manufacturer & Model	Okidata B4300	Panasonic KX-P7305	Samsung ML1750	Tally T9220	Xerox Phaser 3130
Price (ex VAT)	£233 (£198 ex VAT)	£229 (£195 ex VAT)	£159 (£135 ex VAT)	£276 (£235 ex VAT)	£257 (£219 ex VAT)
Supplier	0800 917 6015	0870 156 5566	01932 45 5000	0800 652 4556	0870 873 4519
Info	www.oki.co.uk	www.panasonic.co.uk	www.samsungelectronics.co.uk	www.tally.co.uk	www.xerox.co.uk
TECHNOLOGY					
Max Resolution (dpi)	1,200	1,200	1,200	1,200	1,200
Memory/Max memory (MB)	16/48	16/48	8/8	16/80	32/32
PRINT SPEEDS					
Nominal max speed	18ppm	18ppm	16ppm	20ppm	16ppm
First page print time (from standby)	11s	15s	22s	30s	32s
A4 mono text page speed	9s	12s	12s	12s	13s
A4 graphics and text test speed	9s	14s	12s	12s	18s
10x8 inch photo test speed (high quality)	12s	1m 09s	13s	24s	44s
MEDIA HANDLING AND FONTS					
Main input tray capacity	250 sheets	250 sheets	250 sheets	500 sheets	250 sheets
Priority input tray capacity	1 sheet	1 sheet	1 sheet	100 sheets	1 sheet
Output tray capacity	150 sheets	150 sheets	50 sheets	250 sheets	50 sheets
Duplex printing	Manual	Automatic	No	Automatic	No
Printer language	PCL 5e, PCL 6, Epson, IBM	PCL 6	PCL 6, IBM, Epson	PCL 5e, PCL 6, Epson, IBM	PCL 6, IBM, Epson
Postscript	Optional	Yes	No	Optional	No
RUNNING COSTS					
Cartridge price	£46	£47	£58	£104	£56
Estimated pages per cartridge	6,000	5,000	3,000	8,000	3,000
Print drum price	£106	£109	In toner cartridge	In toner cartridge	In toner cartridge
Estimated pages per print drum	25,000	20,000	3,000	8,000	3,000
Overall cost per page	1.2p	1.5p	1.9p	1.3p	1.9p
INTERFACE AND CONNECTIVITY					
USB/Parallel/Ethernet	Yes/Yes/Optional	Yes/Yes/No	Yes/Yes/No	Yes/Yes/Optional	Yes/Yes/No
Wireless	No	No	No	Optional	No
PHYSICAL SPECIFICATIONS					
Dimensions (WxDxH)mm	335x395x200	399x391x254	348x335x193	386x436x326	348x335x193
Weight (Kg)	9	10	7	13.5	7
Noise level (dBA)	35-53	37-49	35-52	35-52	35-52
PCPlus verdict 9		PCPlus verdict 8	PCPlus verdict 7	PCPlus verdict 9	PCPlus verdict 5

PCPlus Verdict

Faster, better, cheaper – but which of the 17 lasers here makes it to the top of the class?



EDITOR'S CHOICE

Kyocera Mita FS-1020D

PRICE £244 (£208 ex VAT)

SUPPLIER Kyocera Mita 0845 710 3104

INFO www.kyoceramita.co.uk

At £244, the Kyocera certainly isn't the cheapest printer on test, but it's not the most expensive either. With a true 20ppm maximum A4 output rate, the FS-1020D is fast and accurate, making a fine job of standard text printing and DTP at 600dpi, and doing full greyscale justice to photos at 1,200dpi.

The generous standard allocation of 16MB of memory is upgradable up to a whopping 272MB, making a wide range of Ethernet and Token Ring



extras even more tempting, while the two-tray input capacity of 300 sheets can be upped to 550 pages.

On top of the Kyocera's excellent speed and print quality, it offers a wide range of printer language emulations, fully-automatic duplex printing and, winning hearts in the accounts department, has the cheapest running costs of any printer on test.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

ANALYSIS

Mono laser printing takes in a surprisingly wide range of options

The science of laser printing is long established and, as such, all the manufacturers with models featured in this lab test have refined the process to enable page after page of crisp, high-definition output. The typical print resolution for text is 600dpi, which is plenty to allow the finest font attributes to be accurately reproduced, even at very small point sizes.

However, if you want to print a greyscale photo or a DTP page of mixed text and graphics, then 1,200dpi is to be preferred. One of the main considerations here is the amount of memory contained in the printer, as whole-page pictures at top print resolution can demand a lot of memory and, unlike inkjet printers, a laser has to keep the data for a whole page in its memory before outputting it. The Konica Minolta PagePro 1300W and Samsung ML1750, for example, are poor choices if you want full-page, high-resolution photo printing, as they don't have enough memory fitted to make the most of their 1,200dpi output, and the amount of memory is not upgradeable.

A more practical business benefit is the running costs of the printer. Lasers, with their print drum built into the toner cartridge, allow for quick and easy swapping of the whole imaging system and aren't necessarily any more expensive to run. For example, the Kyocera Mita FS-1020D combines its print drum in a £58 toner cartridge that should last for over 7,200 pages, making it the cheapest laser to run in its class. Compare its 0.8p per page printing cost with the Epson EPL-6200, which can cost up to 3.3p per page, and you'll see that there are big differences involved, even though the Epson is a good choice if you want a low-volume, PostScript-compatible printer on a tight budget.

For cutting running costs further, all the models on test offer a toner saver printing mode, although print quality usually suffers dramatically. For serious cost saving, and environmental friendliness, a printer that offers automatic duplexing, for printing on both sides of the page, can pay dividends. In the group, only the Kyocera FS-1020D, Panasonic KX-P7305 and Tally T9220 offer this as standard.



BEST VALUE

Konica Minolta PagePro 1300W

PRICE £89 (£76 ex VAT)

SUPPLIER Konica Minolta 01784 44 2255

INFO http://konicaminolta.co.uk

The baby Konica only costs around a third of the most expensive lasers on test, but makes an excellent job of providing quality output, fast. It's a great space-saver, with foldaway paper trays, and even offers full 1,200x1,200dpi printing, even if it doesn't have enough memory to print a whole graphics page at this resolution. In spite of its low price, consumables are also very reasonable. The combined cost of 6,000-page toner cartridges and 20,000-page print drums works out to 1.6p per print, making the Konica easy to live with.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10



BEST PERFORMER

HP LaserJet 1300

PRICE £245 (£209 ex VAT)

SUPPLIER HP 0845 270 4222

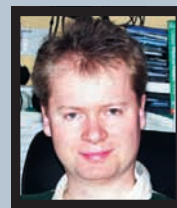
INFO www.hp.com/uk

With its long and illustrious history in laser printer manufacture, HP has brought all its class to bear on the LaserJet 1300. An attractively-styled package, the HP also has great build quality and provides excellent printing results for text, graphics and photos. The 'instant-on' fuser section means that, even from standby, you'll get your first text page in just eight seconds. The LaserJet repeated this super-fast time for mixed text and graphics DTP pages and even our 8x10in photo was outputted in 1,200dpi high-quality mode just 10 seconds.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

PCPlus SOFTWARE LAB TEST

→ Nine video editing packages vie for star billing



James Morris
j@tzero.co.uk

James has been editing video with computers for over a decade, from music promos to documentaries and video art

Straight to video

Video packages for the PC have become easier to use and are more powerful. **James Morris** screen-tests nine of the best

Digital camcorders have brought a new era to video editing. Now that you can pick up a DV camera for under £300 plus VAT, the bar has been raised in terms of video quality. But digital camcorders have heralded another major revolution in ease of use. Almost universally equipped with FireWire connections, DV camcorders have made importing video onto your PC a doddle. Whereas analog video capture required separate video and audio connections, and a mastery of their complicated settings, a DV camcorder just needs a single FireWire cable, and acts like a tape drive.

The result has been a burgeoning of interest in editing video on your PC. It's not quite true to say that 'your granny could do it', but some of the apps on test this month certainly come close. We've brought together

nine of the best packages for this Lab Test, ranging from those intended for the absolute neophyte, to semi-professional applications primarily aimed at event videography, corporate training, and beyond. All of them are adept at turning your tapes into video programmes to be proud of.

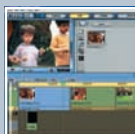
These days, however, you may not want to even bother going back out to tape. DVD has taken the world by storm, and a number of the packages on test can burn your edited efforts straight to DVD or VideoCD. Many can encode video you could stream over the Internet, too, and some even bundle access to a video-streaming service. Whatever your intended audience and price requirement, you're sure to find software to meet your needs in this month's silver-screen selection.



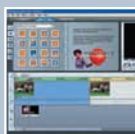
Editor's Choice

Our top award for products that combine exceptional performance and quality with superb value for money

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Intervideo WinDVD Creator 2
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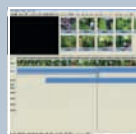
Pinnacle Studio 9
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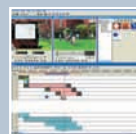
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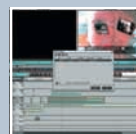
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INTERVIDEO WinDVD Creator 2

INFORMATION

PRICE £30 (£26 ex VAT)

SUPPLIER www.amazon.co.uk

INFO www.intervideo.com

REQUIREMENTS

CPU 600MHz Pentium III

RAM 256MB

OS Windows 2000 or XP

ENTRY-LEVEL

PCPlus ratings

INTERVIDEO WINDVD CREATOR 2

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 5

WinDVD Creator is somewhat unique in this Lab Test. It's not so much video editing software, but a DVD authoring app with serious pretensions in the editing direction.

As with most software at the lower end of the market, WinDVD divides the editing and output process into stages: – Capture, Edit, Author, and Make Movie. These are arranged as buttons along the top of the interface, with arrow motifs pointing from one to the next. The capture applet picks up installed Windows capture devices, such as a FireWire-attached camcorder, and makes each available as an icon. However, the tools available are the most minimal of all apps on test. You can't scan tapes to create individual clips automatically, and there's not even in/out point logging with batch capture. Instead, you're either forced to capture an entire tape, or to laboriously start and stop recording as you watch the footage. Video can be captured in DV format or MPEG-2 at a variety of preset qualities.

Editing is similarly simplistic. You can add transitions between clips, some of which are 3D effects, but there are no filters and there's no overlay track, although you can add a music soundtrack. The titling abilities are also very minimal, with nothing more elaborate than font and colour customisation. There are, however, a number of canned animations that can be applied, and at least there's a timeline mode as well as a storyboard.

Where WinDVD does come into its own is in the DVD authoring stage. Here, you can call upon a variety of preset styles, or create your own using an imported image and the selection of buttons included. Chapter points are



WinDVD offers a cheap way to throw together a few video clips and burn them to DVD, but little more.

automatically placed for each clip on the timeline, and you can delete any that you don't want. Once your content is finalised, WinDVD will burn it to DVD, VideoCD, Super VCD, and even a couple of DVD-on-CD formats, straight from the timeline.

If you just want to throw a few files together to burn to an optical disc, WinDVD Creator is easy to use and cheap to buy. But it's out of its depth this month, as all of the entry-level apps have built-in DVD authoring, and much more powerful editing capabilities.

PINNACLE Studio 9

INFORMATION

PRICE £53 (£45 ex VAT)

SUPPLIER www.dabs.com/uk

INFO www.pinnaclestudio.com

REQUIREMENTS

CPU 800MHz Pentium III

RAM 256MB

OS Windows 98SE or later

ENTRY-LEVEL

PCPlus ratings

PINNACLE STUDIO 9

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 8

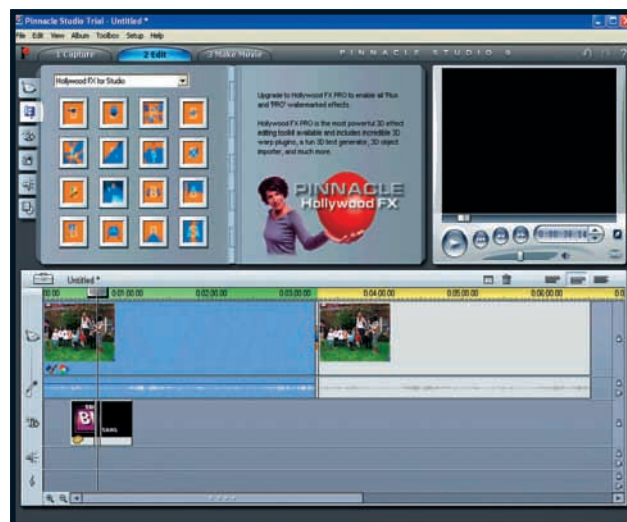
Pinnacle Studio has been one of the success stories of desktop video editing. Amongst the various attempts to make editing easier, Studio got the level just right.

The Studio interface hasn't changed much over the years. Using the motif of a tabbed photo album, the software guides you through the three stages of capture, editing and output via three buttons along the top. Video acquisition can be either in DV format, full quality MPEG, or a preview quality M-JPEG. The full quality MPEG setting can be fully configured for DVD, VideoCD or Super VCD, or user-defined, while the preview quality has three settings.

Studio starts off with a storyboard, so you can easily drag your clips into the order required. It's also easier to add transitions at this stage. The range of these has been greatly expanded with the inclusion of Alpha Magic gradients and Hollywood FX 3D effects.

Titling is provided by integrated TitleDeko technology, another professional-grade application from the Pinnacle stable. It's capable of some very eye-catching text, and has a host of preset styles. However, its animation options are no match for Ulead VideoStudio 8. Similarly, you can't add overlay video tracks, just titles. Useful selections of filters are provided, though, including image stabilisation, colour correction and fun favourites like old movie. Many can be customised, but none keyframed.

One of Studio 9's strengths is in audio. This can be cut independently of the video, unlike the competing VideoWave package. It also has the ability to mix down surround sound, and some powerful VST audio filter plug-ins are included too.



Probably the most successful entry-level PC editing application, Studio packs a host of features into a simple interface.

Studio's disc authoring abilities are also completely intertwined with editing, so you can design menus on the timeline and set chapter points.

Studio remains a very strong contender. It's supremely easy to use, and tends to eschew eye-candy effects in favour of more useful tools for building watchable video. Its output options are also extensive, with the ability to burn straight to CD or DVD. Best of all, your edits are rendered in the background while you carry on working, so you can see a full quality preview of your effects soon after adding them.

INFORMATION

SUPPLIER www.dabs.com/uk
INFO www.roxio.co.uk

REQUIREMENTS

CPU 1.2GHz Pentium III
RAM 256MB
OS Windows 2000 SP4 or Windows XP SP 1

ENTRY-LEVEL

PCPlus ratings

ROXIO VIDEOWAVE 7

Value 1 2 3 4 5 6 7 8 9 10

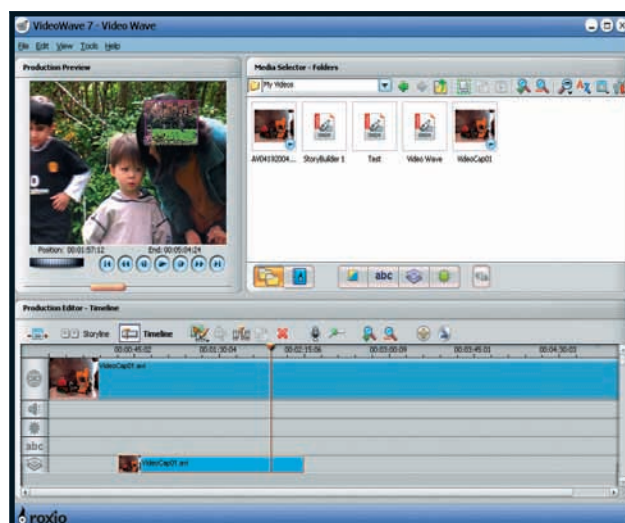
Features 1 2 3 4 5 6 7 8 9 10

Performance 1 2 3 4 5 6 7 8 9 10

OVERALL **7**

Once all your clips have been captured, the introductory window offers three different editing methods. There's the traditional VideoWave app, plus two further levels of automation. CineMagic automatic editing does it all for you – you pick the video and audio files you want to use, specify a style, and CineMagic does the rest. You can output to a file or fine tune video in the manual VideoWave app. For more control, there's a method called Guided edit with the StoryBuilder option. This is a wizard that takes you through the various editing stages. As with CineMagic, you can then tweak the resulting edit in VideoWave or create a finished file.

VideoWave has a storyboard mode to lay out your clips in order and add transitions. Then you can switch to timeline mode to add effects, titles and overlay a single track. Unlike VideoStudio, VideoWave can also do chroma and luma keying, as well as picture-in-picture, so you can create blue-



VideoWave 7 is easy to use and can do keying, but it can only apply one effect at a time, and settings can't change over time.

screen effects by removing a background colour.

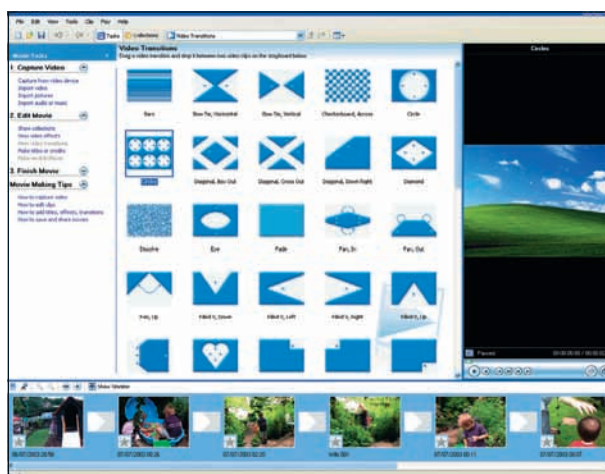
Other than that, however, VideoWave has a lot less depth than the Ulead alternative. Only one effect can be applied at once, and there's no keyframing, so effects are static. The range of title styles is extensive, but animation options are very simplistic – just a few slides and fades. Output options are wide-ranging, particularly the ability to burn a project to DVD directly from the timeline, but the editing capabilities are limited and could easily be outgrown once you become a more adventurous editor.

The four 'entry-level' packages reviewed this month can be a great way to learn the video editing ropes

If you're new to PC video editing, the prospect can be frightening, although DV and FireWire have made it a whole lot easier. What you need is software that not only guides you through editing, but gives some thought to why you're doing it in. Primarily, you'll want to take out all the unwanted portions of your video clips, and arrange them in an order to tell a story. For a start, automated tape-scanning sets up the clips for you by detecting natural breaks in your footage such as a change in time of recording. You can set your PC recording video from tape, and come back later to find all your rough clips divided up ready for editing.

All of the entry-level software on test this month also offers some form of wizard-based automated editing, based around generic types of video such as weddings, birthdays, or fake old movies. You're unlikely to want to let the wizard do all the work, but it's a great place to start if you're completely unfamiliar with editing. You can then progressively move over to the manual approach once you have a clearer idea of what editing's all about.

However, many vendors make the mistake of throwing in heaps of flashy effects into their entry-level apps while missing out on the everyday editing tools. This might make the non-savvy pick up a copy, but as the early days of DTP programs showed, throwing in too many whacky



Windows MovieMaker 2 is a great, free way to try out video editing, but it's for Windows XP only.

effects just makes the end-result look like a bad cinema ad. Nevertheless, in order to have room to grow as your ideas become more adventurous, you'll need features such as a superimposition track for picture-in-picture, and the ability to add multiple filters at once.

It's worth noting that if you already have a PC with FireWire, you can give video editing a whirl with Windows Movie Maker 2 for free. So long as

you have a PC running Windows XP, you can download a copy from www.microsoft.com/windowsxp/moviemaker/downloads/moviemaker2.asp. It has many of the tools found in the entry-level software on test this month, including burning to disc, but it doesn't create DVDs or VideoCDs – it uses Microsoft's proprietary HighMAT format, which isn't supported by many set-top DVD players just yet. ■

ULEAD VideoStudio 8

INFORMATION

PRICE £50 (£43 ex VAT)
SUPPLIER www.dabs.com/uk
INFO www.ulead.co.uk

REQUIREMENTS

CPU 800MHz Pentium III
RAM 256MB
OS Windows 98SE or later

ENTRY-LEVEL

PCPlus ratings

ULEAD VIDEOSTUDIO 8

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 9

Ulead VideoStudio has always been a cut above the entry-level pack. It was the first app at this level to offer a superimposition track, so you could create picture-in-picture effects or perform simple layering, although not blue-screen effects.

The latest VideoStudio version adds an automatic editing wizard that guides you through capturing video. It also gives you a selection of style templates to choose from, such as Old Movie or Weddings, before creating the edit for you. It then gives you the option to encode a new file from the edit, burn it to disc, or tweak it manually in the standard VideoStudio program. Although the automatic editing doesn't really give the best results, it does save time if you then opt to tweak the results in the manual mode.

Considering the price, VideoStudio is a powerful editor. You start off laying your clips out in the storyboard view for a rough edit, then switch to a timeline for more detailed work. There are 37 filters, and you can apply more than one at once, even keyframe them. There are also a huge number of transitions available including animated 3D options. Titling has been improved with this version too, and you can now edit titles in place rather than via a dialog, for truly precise text placement. There are some very eye-catching animations that can be applied as well, plus there's the overlay ability we've already mentioned.

But although VideoStudio does output to FireWire directly from the timeline, we didn't find this was reliable enough to record back to tape when complex effects were applied. We had to output a DV file and record that instead. But you can't



Very sophisticated titling, keyframed filters and picture-in-picture overlays make for an entry-level app with plenty under the hood.

expect professional-grade real-time editing at this knockdown price. However, DVDs and VideoCDs can be created from the timeline, complete with chapter points and menus. Another innovative feature is the ability to send your video straight from the timeline to the Neptune Media Share online web video streaming service, although you'll have to pay \$49 a year for the privilege.

All in all, this is an incredibly powerful and complete editing package for the money. If you're new to video editing, VideoStudio 8 makes a great starting point.

CANOPUS Let's Edit

INFORMATION

PRICE £100 (£85 ex VAT)
SUPPLIER www.dvc.uk.com
INFO www.canopus-uk.com

REQUIREMENTS

CPU 800MHz Pentium III
RAM 256MB
OS Windows 2000 SP3 or Windows XP SP1

INTERMEDIATE

PCPlus ratings

CANOPUS LET'S EDIT

Value ●●●●●●●●●●

Features ●●●●●●●●●●

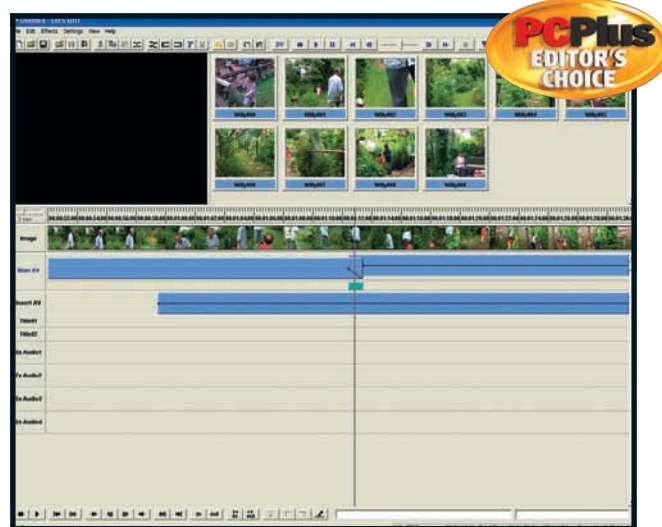
Performance ●●●●●●●●●●

OVERALL 9

Like Edius, Canopus Let's Edit was originally intended to run exclusively on Canopus hardware. But it can now be used with any OHCI FireWire adaptor, although Canopus also offers bundles with two of its own adaptors. The RT hardware adds real-time analog video output, and the RT+ analog input as well. Our only criticism is the lack of automated tape scanning with any of these options, leaving you to log and batch captured video manually.

The whole ethos of Let's Edit is simple editing. You can still create some sophisticated effects, but this isn't a multi-track editor in the Premiere style. Instead, you get just two tracks – one for the main video assembly, which also supports transitions, and a superimposition layer. Up to four title layers can be added on top as well, or ten when used alongside Canopus hardware, although we wonder how useful quite so many is likely to be. The titler itself is reasonably sophisticated, with animation options and support for text layers. Titles can also contain still images, allowing slide shows to be added to your movies.

Where Let's Edit really shines is in its filter support, keying and picture-in-picture options. There are a good variety of filters, from useful tools like White Balance to the more whimsical ones such as Old Movie. The superimposition track can be used to create motion-controlled 2D picture-in-pictures, while the excellent keying tools can be called upon to make blue-screen effects. The transition selection includes sophisticated 3D such as page peels, although there's not as many options as with Pinnacle Studio 9's Hollywood FX plugin. Best of all, on fast enough hardware, everything can be



Canopus's Let's Edit gives you real-time editing power for a fraction of the cost of a full professional package.

previewed in real time, and even output from the timeline to DV tape via FireWire without rendering.

Otherwise, output options include all the usual suspects – various types of MPEG for DVD, VideoCD and SVCD, streaming media in QuickTime, Real or Windows Media formats, and DV files. MPEG encoding is particularly quick. Although there's no built-in DVD authoring.

If you're finding entry-level editing software limited, Let's Edit offers considerably more power and productivity for not much extra cash.

Ulead Media Studio Pro 7

INFORMATION

PRICE £206 (£175 ex VAT)

SUPPLIER www.dabs.com/uk

INFO www.ulead.co.uk

REQUIREMENTS

CPU 800MHz Pentium III

RAM 256MB

OS Windows 98SE or later

INTERMEDIATE

PCPlus ratings

ULEAD MEDIA STUDIO PRO 7

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 8

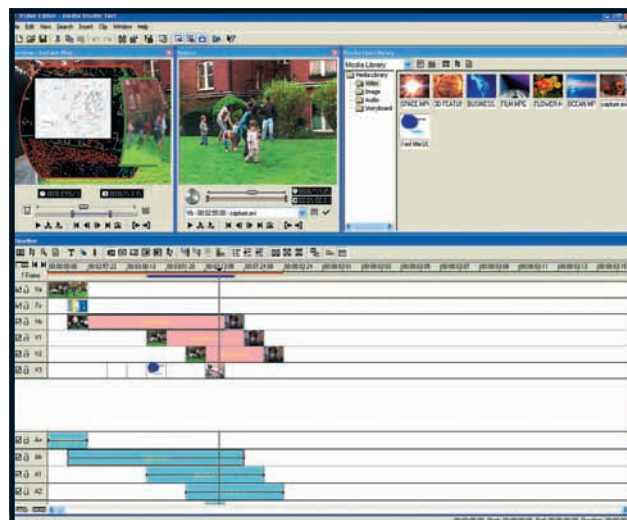
Ulead's grown-up video editing package, Media Studio Pro, has fallen out of the limelight a little recently. Unlimited video tracks are supported, but Media Studio still uses A/B editing, so only supports transitions between the first two tracks. Nevertheless, it's still one of the most mature packages around, with loads of power and great value on offer.

Media Studio Pro 7's big new feature when it was released last year was real-time effects playback, but Edius and Liquid Edition have since bettered this. The preview is output via FireWire and the PC screen, so you can hook up a camcorder to feed this out to a TV. Some graphics cards will even output video to a TV directly. You can also selectively choose to render sections that go beyond real-time playback.

Media Studio Pro has always had an impressive selection of filter effects, but not all of them in version 7 are optimised for real-time playback – an R indicates those that are. Quite a few of the everyday filters, like colour correction, are included, but you'll still find important ones missing – a soft focus effect, for example. The transition options are also extensive, but again the R denoting real-time playback is far from universal.

The built-in titling function looks a little pedestrian, although it can import RTF files and mix fonts within a single title, and there are nine types of animation that can be applied. The CG Infinity package is bundled as well, and this is capable of much more elaborate full-motion titling, and the files it creates can be placed straight onto the timeline.

All the expected output options are available, from web



Compared to the higher end competition, Media Studio Pro's interface looks prosaic, but it remains a fully featured editor.

streaming video to printing out to DV tape to MPEG encoding. But there's no integration of DVD authoring with the main editing app. Instead, DVD MovieFactory 2.1SE, a cut-down version of Ulead's capable authoring package, is included for authoring optical discs. But you still have to go through the tedious process of outputting a file then importing it into the MovieFactory environment.

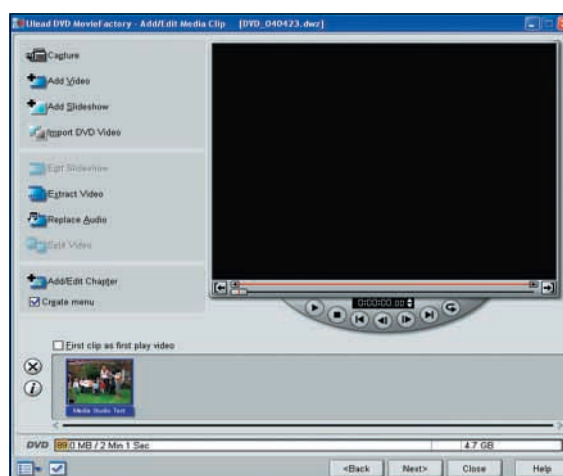
Overall, Media Studio Pro looks very promising, considering the price. It may have an antiquated interface and be lacking in integration, but it's still a powerful editing tool.

The more experienced user

The mid-range or 'intermediate' products will give you a host of extra options to create better video projects

Once you've got the hang of editing, and want to do more elaborate things with your video, you'll find that the entry-level apps are somewhat limited. Pinnacle Studio 9, for example, is great for telling stories, but with no overlay track feature, if you fancy creating a music video it will restrict what you can do. Even our award-winning Ulead VideoStudio 8 has its limitations. Although it strikes a good balance between effects, clip editing tools, and ease-of-use, it's missing one or two semi-professional capabilities, in particular keying. This is the blue-screen effect that superimposes one element from a video over a background by removing a predefined colour from the video, usually blue.

So what constitutes a good upgrade? For the more experienced editor, the handholding found in entry-level software interfaces could actually be counter-productive. You'll still want labour-saving devices like automatic tape scanning and clip creation, but primarily you'll be looking for greater control and speedier workflow. Unless you take a massive leap to a fully professional application like Premiere Pro, Liquid Edition or Edius, you'll be left with quite different products to choose from with disparate capabilities. Media Studio Pro, for example,



Both mid-range packages on test this month come bundled with Ulead's DVD MovieFactory 2.

mimics the features of the previous versions of Premiere, and improves upon them for a considerably smaller outlay. But it's overkill for most of what a hobbyist video editor will want to do.

Instead, professional grade filters, colour correction plus some picture in picture and keying that are not hidden behind a so-called 'friendly' interface will be all you

need. You'll also find that handy key shortcuts will speed up editing. And, as with professional editing software, seeing your effects at full resolution with no waiting for rendering will be important. It also saves loads of time if you can output your projects to tape without rendering, while accelerated MPEG encoding speeds up the DVD creation process too. ■

ADOBE Premiere Pro 1.5

INFORMATION

PRICE £546 (£465 ex VAT)
SUPPLIER www.dabs.com/uk
INFO www.adobe.co.uk

REQUIREMENTS

CPU 800MHz Pentium III
RAM 256MB
OS Windows XP

SEMI-PROFESSIONAL

PCPlus ratings

ADOBE PREMIERE PRO 1.5

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

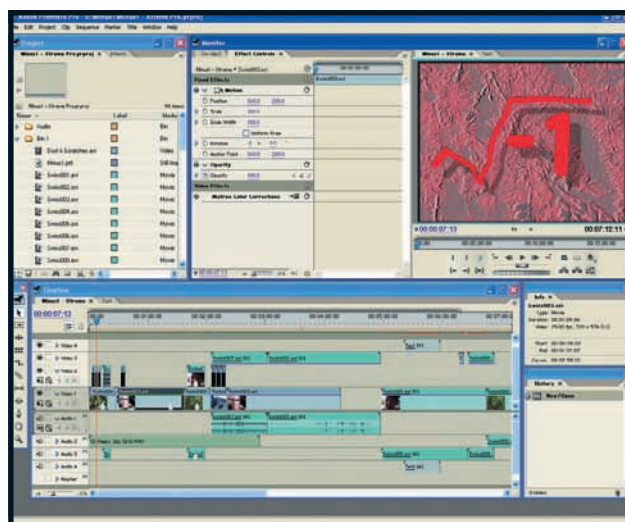
OVERALL 8

Premiere is the granddaddy of PC video editing packages. Adobe rewrote the entire application for Premiere Pro, which otherwise would have been version 7. It's a major update, although it still manages to feel like the old Premiere, and it's already on version 1.5.

The interface has changed considerably since Premiere 6.5. For a start, A/B track editing has been abolished in favour of the more professional single-track mode. As a result, transitions can now be placed on any track. The most powerful interface change, though, is the tabbed editing system. Previous versions of Premiere could nest projects, but you would need to close the master project to edit one nested inside it. Premiere Pro puts nested sequences as tabs along the top of the timeline window, so you can quickly jump from one to another. This is a massive leap forward in editing, allowing a project to be worked on in a modular fashion. You can even apply effects to nested sequences.

Capturing now includes scene detection, so you can leave a DV tape to be recorded and divided into individual clips automatically. As this is a firmly professional editing app, there are unlimited layers to call upon, and hundreds of filter and transition effects. If those aren't enough, there's huge support from third-party plug-ins, although some need to be rewritten to work properly in Premiere Pro's new architecture. Adobe's built-in Title Designer isn't up to the quality of TitleMotion Pro 4.3 included with Edius, but it's still very capable.

One area where Premiere Pro can't match Edius or Liquid Edition is in its software real-time playback abilities, even



Premiere Pro's tabbed timeline takes working with nested sequences into a new realm of power.

with the performance improvements in this latest version. It can output to DV in real time, this requires very powerful hardware. Premiere Pro comes into its own with hardware such as Matrox's RTX100 or Canopus's DVStorm2 SE, but it falls behind Liquid Edition when it comes to DVD creation.

Despite the code rewrite and improvements in the new version, Premiere Pro is missing the real-time editing power of Liquid Edition and Edius when it's used without supporting hardware. It also lacks Liquid Edition's built-in DVD authoring, although it remains strong on many other levels.

CANOPUS Edius 2

INFORMATION

PRICE £410 (£349 ex VAT)
SUPPLIER www.dvc.uk.com
INFO www.canopus-uk.com

REQUIREMENTS

CPU 1GHz Pentium III
RAM 256MB
OS Windows XP

SEMI-PROFESSIONAL

PCPlus ratings

CANOPUS EDIUS 2

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

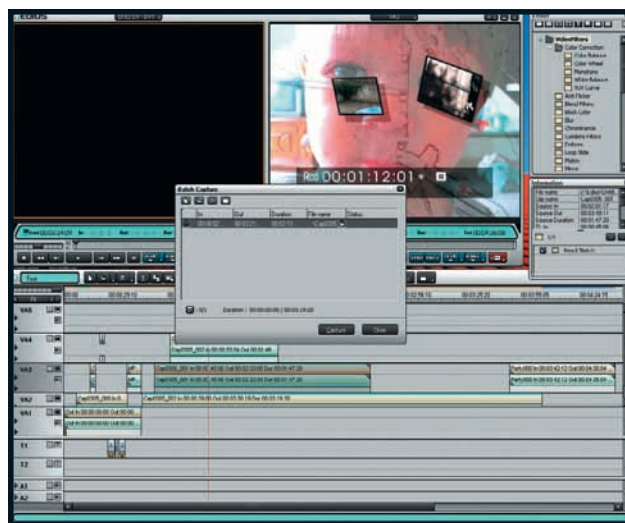
OVERALL 8

Edius is a relative newcomer, having arrived on the scene around a year ago, but already it has reached version 2. Originally, Edius required Canopus hardware to run, but with the latest release anyone with an OHCI FireWire card can give it a whirl – including notebook users.

Edius's interface feels very different to a traditional Windows-based application. So many palettes are available and you're also better off using it on a dual monitor set up. But it's still not that hard to get to grips with. Basic tape-scanning and batch-capture tools are included, and it can capture straight to MPEG with the right hardware.

Whereas Canopus's Let's Edit is intended for simple, non-layered edits, Edius supports unlimited layers. Transitions aren't reserved for the first two layers, but can be used throughout, although not at the same time as keys either 2D or 3D picture-in-picture. Some excellent effects are included, such as the superb Old Movie/Film, but not all can be keyframed – colour correction being the most notable. The range of effects is also not as broad as either Premiere Pro or Liquid Edition. Unfortunately, as Edius is still a youngster in this market, there's not much option to extend this via plug-ins, either – Premiere still very much holds that crown. But the bundled TitleMotion Pro 4.3 goes some way to make up for it and it's one of the most powerful titlers currently available.

Edius beats the rest of the software-only competition hands down in real-time playback. Whereas other editing packages, Premiere Pro included, will play back some effects in real time, generally the best they'll give you is a degraded preview. But on 2GHz or faster hardware, Edius can manage



Edius boasts the fastest real-time editing performance around, but it will take another version to catch up in terms of features.

three or four layers of video in real time complete with transitions and effects – straight out to an attached DV device. It can also edit MPEG in real time in the same projects as DV.

Couple the above talents with the bundled copy of Canopus's excellent ProCoder Express, which will encode MPEG, streaming media, and even DivX from the timeline, and you've got a very complete package. It may not have the power or heritage of the competition, but for speedy workflow Edius 2 can be a very tempting proposition.

PINNACLE Liquid Edition 5.5

INFORMATION

PRICE £499 (£425 ex VAT)

SUPPLIER www.dvc.uk.com

INFO www.pinnaclesys.com

REQUIREMENTS

CPU 1GHz Pentium III

RAM 256MB

OS Windows XP

SEMI-PROFESSIONAL

PCPlus ratings

PINNACLE LIQUID EDITION 5.5

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 9

Pinnacle's Edition 5 broke a lot of new ground on its release. Renamed Liquid Edition, version 5.5 offers even more.

Edition's big innovation is to use the host system's graphics card and CPU at the same time for accelerating real-time rendering performance. Effects are explicitly earmarked as using the GPU or CPU, and some even come in both flavours, like the 2D and 3D editors. There are heaps of effects on offer, augmented by Alpha Magic gradient wipes and Hollywood FX 3D transitions, although there aren't as many as Premiere Pro.

As with Media Studio, not everything is real-time, however. There are also so-called classic filters, some even replicating the real-time versions. This includes the new Advanced Colour Correction, which allows you to adjust colours individually as well as across the scene. Although they're not real time, classic filters do render in the background as you continue to edit. Although it can't match Edius's real-time performance, Edition is capable of rendering quite a lot of effects and three or four streams of video in real time on powerful enough hardware. But it can only do this to the PC monitor, not out to DV or a TV. For £130 more, you can pick up the Pro version, which includes an ATI graphics card to provide output to analog devices.

Edition's interface won't be to everyone's liking. It's intended to take over your GUI entirely, and there's even a fake Start button at the bottom left-hand corner. It's completely non-Windows standard, to the extent that there are not even any menus. Instead, functions are accessed via buttons or by right clicking with the mouse. Although this



CPU and GPU are called upon to render Liquid Edition's effects in real time. Menu-driven DVDs can be authored from the timeline.

takes some getting used to, once you know your way around, most operations are a single click away.

As it can't output via FireWire in real-time, Liquid Edition can't output to DV tape without rendering first, unlike Canopus Edius. But if you're intending to author a DVD, all the tools are fully integrated into the editing environment. You can create your menus and chapters, encode MPEG-2 and burn straight from the timeline. Alongside the powerful real-time editing capabilities, this makes Liquid Edition 5.5 a top-notch all-round package for professional video making.

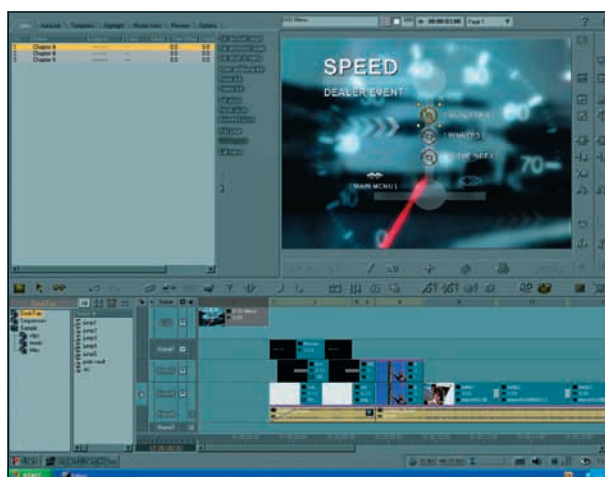
The professional choice

Pay top whack and you'll get a top-notch professional editing suite

Choosing video editing software at the professional end of the market is much more complicated than lower down the scale. The decision isn't just about what the software can do on its own. All three of the packages in this category can be greatly enhanced by the addition of extra hardware. Canopus's Edius can be augmented by Canopus's own DVStorm2, or DVReX editing cards, Pinnacle Liquid Edition gains analog output via the Pro version's AGP graphics, and Premiere Pro gets a significant boost from Matrox or Canopus adaptors.

For a number of years now, the primary area of development in professional video editing software has been in real-time effects rendering. When it first arrived, desktop video editing meant a step forward from the old analog systems in terms of accessing and arranging clips – so-called non-linear editing, or NLE. But when it came to adding effects, the new digital systems were actually less responsive than the old analog mixers. You could perform much more elaborate effects on considerably cheaper hardware, but you'd have to wait to see the results, which could really dampen creativity.

Then real-time editing hardware arrived, revealing the huge benefit of being able to see your effects immediately. And now that host CPUs and graphics cards are so powerful, it makes sense to move the effects processing over



Pinnacle Liquid Edition 5.5 has powerful DVD authoring tools built right into the timeline.

from proprietary hardware to these core system components by using software APIs. Applications like Pinnacle Liquid Edition and Canopus Edius show how powerful rendering effects in software can be, although both still benefit from proprietary add-in cards. But software rendering is clearly the future, and how many effects can be mixed in real time at once on the same hardware is fast becoming a major differentiating

factor for professional editing software.

DVD authoring is likely to be the distribution method of choice over tape for many types of professional video making, such as corporate or event videography. All three professional applications on test this month have good DVD output support, although only Liquid Edition has all the tools you need built in, without recourse to external applications. ■

PCPlus Verdict

The competition has been hard fought this month, but here's the pick of the bunch from each category

**PCPlus
EDITOR'S
CHOICE**

ENTRY-LEVEL



EDITOR'S CHOICE

Ulead VideoStudio 8

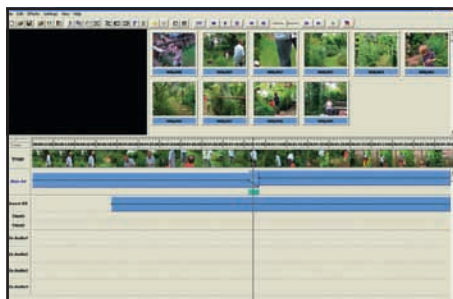
PRICE £50 (£43 ex VAT)
SUPPLIER www.dabs.com/uk
INFO www.ulead.co.uk

The Editor's Choice award was a shoot out between Pinnacle Studio 9 and Ulead VideoStudio 8, but Ulead's proposition just won out. It's marginally cheaper, and offers a similar completely integrated editing environment from video capture to outputting to DVD or Web streaming. There are enough effects available to keep you interested for years, with keyframeable filters and a superimposition track. But, above all, VideoStudio 8 is supremely easy to use.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

**PCPlus
EDITOR'S
CHOICE**

INTERMEDIATE



EDITOR'S CHOICE

Canopus Let's Edit

PRICE £100 (£85 ex VAT)
SUPPLIER www.dvc.uk.com
INFO www.canopus-uk.com

With only two products filling the gap between entry-level and professional, you'd think the choice would be easy. Far from it. But Let's Edit's sober approach to editing, focusing on responsive real-time editing rather than an overabundance of eye-candy, makes it perfect for someone who's outgrown the cheaper options. It may not have multiple layers, but by limiting you to one superimposition track, Let's Edit keeps the workflow up so you can concentrate on the most important thing – making great-looking video.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

**PCPlus
EDITOR'S
CHOICE**

SEMI-PROFESSIONAL



EDITOR'S CHOICE

Pinnacle Liquid Edition 5.5

PRICE £499 (£425 ex VAT)
SUPPLIER www.dvc.uk.com
INFO www.pinnaclesys.com

If you're looking for professional editing software and don't want to be tied to specific hardware, Liquid Edition 5.5's combination of excellent real-time effects previewing, new filters such as the Advanced Colour Correction, and built-in DVD authoring make it a one-stop-shop. With Pinnacle's high quality MPEG encoding thrown in, Liquid Edition 5.5 takes you from camcorder to disc in style.

PCPlus verdict 1 2 3 4 5 6 7 8 9 10

ANALYSIS

Whether you're editing your holiday videos, or putting together News at Ten, you'll want quick, responsive editing...

We've pulled together quite a range of different editing packages this month, from entry level to professional grade packages.

The three products we've chosen to receive awards exemplify three different skill levels and needs. If you're a beginner, go for Ulead VideoStudio 8 – it will help you get started without breaking the bank. But it will still give you plenty of options for making more elaborate videos as you learn. VideoStudio has always been one of the best entry-level apps, and the latest version manages to pack tons of editing power into an easy-to-use interface. Once you've gone beyond its capabilities, the choices thin out, but we recommend Canopus Let's Edit, which offers real-time editing, which is comparable to the big guns but without the sky-high cost.

At the semi-professional end, each app has its own strengths. Premiere has tabbed nested sequences, plus its long heritage and extensive plug-in support. But its software rendering is comparatively slow. In contrast, Edius offers unparalleled real-time rendering, but more limited effects capabilities. It has strong MPEG editing and encoding features but no built-in authoring. Pinnacle Liquid Edition sits somewhere in between, boasting a much greater range of effects than Edius, yet not as many as Premiere Pro. Its real-time rendering is in the middle of the two as well, but its integrated DVD authoring is currently unparalleled.

However, at the time of writing, Adobe has just released version 1.5 of Premiere Pro, and we just managed to include it in the labs. On the other hand, Edius software has developed so fast in the last 12 months you can expect the trend to continue. There's also high definition video editing on the horizon, which both Canopus and Adobe will support in the next versions of their software. As true HD camcorders arrive later this year, this could change the nature of the game once again.

PCPlus HELPDESK

→ We solve your PC problems

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Paul Grosse and Wilf Hey leave no stone unturned in their quest to provide answers to your software problems large and small

WINDOWS

Restart, restart

Q I notice that nine of the options under the advanced tab in Internet Explorer 6's options require a restart before they take effect, and many programs need a restart on installation or patching as well. I'm often given the option of restarting now or later and opt to restart later, putting off using the program that I've just installed. Is there any way of getting around this problem?
Jay Peoples

A Windows XP isn't as bad at this as earlier versions of Windows. One example is changing the parameters on an Ethernet card, which requires a restart on Windows 98 but just a long, long pause on Windows XP. It appears that the operating system needs to be rebooted so that everything's in its right place in order for it to run. Some driver modules, for instance, had to be loaded into memory before the rest of Windows in some early versions. If the full installation of a new program would cause a change to some deep system characteristics, programs already running would not be aware of the change, and there's the possibility that they would themselves try to do something inconsistent with the new characteristics. Microsoft's straightforward advice to solve such a problem is 'don't get into that situation'.

In true, multi-threaded operating systems, such as Linux, you can update kernel modules and patches, and do virtually everything without needing to reboot; hence you can produce up-times in the range of hundreds of days for many systems. If you do opt not to reboot once you've installed a program and declined the offer, you could encounter problems with compatibility should DLLs or other files you've installed conflict with expected ones that were



The core of the Windows operating system often needs to be restarted after options have been edited in order for it to run happily. You'll have to be patient, though.

on the system at the start.

The only way of getting around this problem that does not involve migrating to another operating system appears to be to wait until Redmond's programmers have solved the problem.

DIGITAL CAMERAS

Wide angles

Q I recently bought a digital camera, but find that I can't get a wide enough view to photograph objects such as buildings. Is there a way around this that doesn't involve me spending nearly a thousand pounds on a camera with the necessary lens?
Shaun Patterson

A Photographing objects that take up a wide angle of the viewer's field of vision and then representing them in two dimensions is always going to be a lie, as parallel lines will appear to converge. Keeping those in one plain straight (as you would with horizontal and vertical parallels if you were using a rising front camera) only accentuates the convergence of the other sets.

One solution, using a more humble camera, would be to imitate the look created by whole-school panoramic cameras, which would be placed at the centre of a circle of seats and then rotated through 360 degrees, producing a photograph that appeared to be of the school pupils sitting on a long straight block of seats; if you look at one of these photographs you will notice that the buildings in the background appear curved.

However, instead of taking a continuous strip, you can make a composite of picture slices. If you can't get far enough away from a building to capture it all in one shot, the solution is to use your camera on a tripod and take a series of shots, approximately 10 degrees apart, so that you get the whole building in. Without a tripod, you will inevitably end up with shots at slightly different angles, which will need straightening up later on. Back on your computer, load up your pictures in an image-processing program – Micrografx Picture Publisher or the GIMP for me, although any program will do providing that it enables you to manipulate layers or objects separately and to edit the alpha layer independently. If you've taken pictures of a tower, such as the one of the Guildhall clock tower in Derby on the following page, you need to join them together in a meaningful way, and this is how to do it:

1 Create a blank image as wide as your photographs and as tall as you think the final image is going to be, plus a bit more to be on the safe side. This will form the base for your composite.

2 If you started at the bottom and worked upwards, copy and paste the first image into your blank at the bottom. You don't need to keep it as a separate layer, but if you run into problems later on with angles, you can straighten it out if you don't combine it with the base at this stage.

3 Go to your second image and head into the alpha mask layer. Choose black

Contact us

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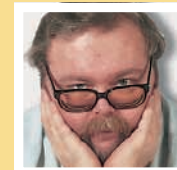
✉ Write to: Campaign, Helpdesk, Future Publishing,
30 Monmouth Street, Bath BA1 2BW

HelpDesk welcomes questions, tips and follow-ups to published items, but please note that we can only respond via the pages of the magazine.



Paul Grosse
paul.grosse@futurenet.co.uk

Paul started helping people with their PC problems back in the 1980s, and now programs for fun



Wilf Hey
wilf.hey@futurenet.co.uk

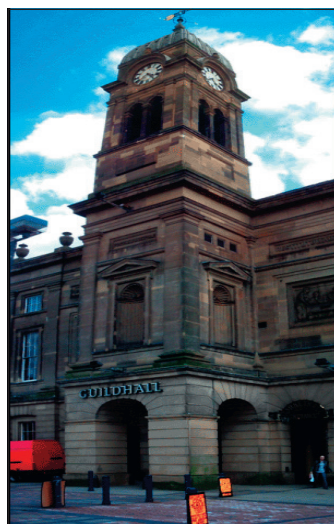
Wilf has been hanging around computers for decades now; you'd think that something clever would rub off on him



<http://forum.pcplus.co.uk>

and white as your foreground and background colours, then create a gradient using the Gradient Fill Tool so that the top of the picture is white or transparent. The transition between the top and bottom should occur over a fairly short distance, but the centre should be half your inter-picture angle below the centre. This means that the planes of the image (in terms of angles, as represented by your images) intersect at the same distance from the camera, and therefore you won't see steps in your image. For example, suppose you took shots every 10 degrees; the midpoint of your alpha channel transition should be equivalent to 5 degrees below the middle of the picture. The reason for using a gradual transition is so that any variations (colour balance, changes in lighting and so on) will not produce a line across the photograph. Deselect the alpha channel button and save your mask.

4 Copy the image into the clipboard and paste it into your blank, positioning it roughly with the mouse and then finely, a pixel at a time, with the cursor keys in Picture Publisher or zoom in using [+] on the GIMP. If you didn't use a tripod, now's the time to straighten the images. With that image in place, go to the next one, load up the mask and repeat the pasting operation until all your images are on the composite.



Turn your digital camera into a super-wide-angled multi-mega-pixel wonder, capable of taking 360 degree panoramas or extended vertical shots like this one.

5 You'll probably notice that the exposure of the images varies. You now need to select each one, and change the maximum and minimum levels so that they all look like part of the same photo. If your camera also changes the colour balance, you might need to correct that back again; a sandstone building filling the shot will have a different colour balance to the top of the building where a substantial proportion is bright blue sky.

6 With all of your images now in place and balanced, you can combine them all with the base and crop it down as necessary. There's more on this subject, with tips and full-sized images, on this month's SuperDisc.

INTERNET

Privacy while browsing

When you go onto the Internet, you might be giving away more information than you thought.

Anybody who's even slightly serious about security will have a firewall installed between their modem and their computer, even if it's just a desktop firewall. However, browsing on the Internet took off before the web was largely taken over by commercial concerns and, even today, browsers can give away information that you might be concerned about.

Some websites have small logos which state that they're 'Best viewed with Netscape 5' or 'Internet Explorer 6', although looking at the content of some they might be better saying 'Best viewed with Telnet on port 80'. The reason for this is that not every browser is the same. Some utilise slightly different extensions to HTML, different screen resolutions or colour depths and so on. However, apart from this useful information – assuming that you have one of the browsers that the web →

WRITE IN

Email your questions to:
pcplushelpdesk@futurenet.co.uk
Or write to:
HelpDesk, PC Plus
30 Monmouth Street
Bath BA1 2BW
Or fax: 01225 732 295
HelpDesk welcomes questions, tips and follow-ups to published items, but please note that we can only respond via the pages of the magazine.

HELP US HELP YOU!

We get thousands of emails each month, so please send your messages to the correct address. Email SuperDisc problems to pcplus.support@futurenet.co.uk

WINDOWS Windows key shortcuts

If you have particular needs, the special uses of the [Windows] key could suffice

Doug Bullen writes to say he can't find documentation that tells him the special uses for the [Windows] key. You will find a complete list in Windows Help, under the subject 'Windows logo key', but here they are in a slightly different sequence:

[Windows] Open the Start menu

[Windows]+[D] Minimise/restore all windows (toggle)

[Windows]+[E] Load Internet Explorer

[Windows]+[F] Open the 'Find all Files' dialog

[Windows]+[M] Minimise all windows (not documented)

[Windows]+[R] Open the 'Run' dialog

[Windows]+[Break] Open the system Properties dialog

[(Windows)+[Ctrl]+[F] Opens the 'Find Computer' dialog)

[(Windows)+[Ctrl]+[M] reverses this)

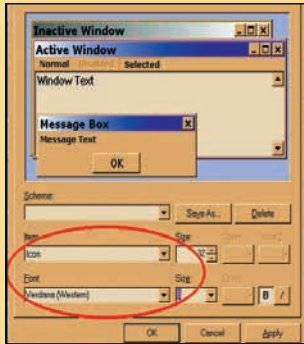
Windows+[F1] Open Windows Help

Windows+[TAB] Cycle through buttons on the taskbar

Note the similarity of [Windows]+[TAB] to [ALT]+[TAB], and also note the differences; using the [Windows] key does not actually modify the screen display. Note also that [Windows]+[D] seems to combine the functions of [Windows]+[M] and [Windows]+[Ctrl]+[M], so you might as well resolve to use it, because it's simpler. ■



Press the [Windows] key alone for this pop-up.



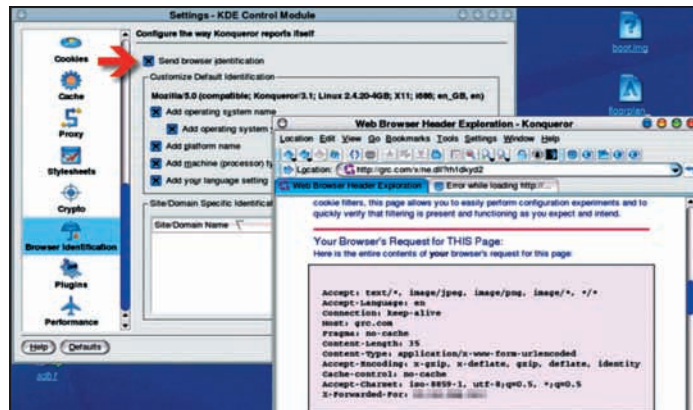
TOP TIP

Want to change the font used by Windows Explorer? You can, but the modification is not in any obvious place. Right-click on a bare part of the desktop and select Properties. From here, activate the Appearance tab. Pull down the list under 'Item' and select Icon. The font and size you choose (and then Apply) will affect the titles of icons, as well as the working of Explorer.

DISPLAY FOLDER SIZES

Mick Knightley asks whether there's a substitute for Windows Explorer that will display the amount of space occupied by the focused folder as it is in the DIR command in MS-DOS. In Detail mode, Explorer tells you how large each item is, but no folder size summary is present.

No new program is needed, because the size characteristics of a folder are recorded in its Properties sheet, so just select it, right-click and choose Properties at the bottom of the right-click menu. Incidentally, did you know that if you select a group of files, a virtual Properties sheet is invented for it, giving combined size? Try it!



Konqueror lets you choose what websites see of you. Go to www.grc.com, locate 'Shields Up!!' and click on 'Browser Headers' to see the relevant options.

designer has actually designed for – other data is sent to the webserver.

In the screenshot above you can see the output from the Shields Up!! website (start at www.grc.com), which performs various security-related operations on your system from the Internet. On the 'Browser Headers' page, the entire contents of your browser's request for that page can be seen – here using Konqueror with 'Send Browser Identification' turned off. In the settings dialogue you can see the 'Browser Identification' dialogue with all of the options checked, showing the string that would appear if enabled. If this is sent, it appears under 'User-Agent'.

At the bottom is 'X-Forwarded-For': and there's the external Internet IP address that the whole world can see. In addition to this, there's also the internal network (LAN IP) address for the machine you're browsing from if you're going through an internal router. The unfortunate consequence of this is that it gives away internal network details such as, if you're using class B or C private address space, which network addresses are being used. An example of this is if you're using 192.168.x.y then it, or anybody using a packet sniffer, can tell what 'x' is. However, if you use https (SSL) that information disappears providing a much needed level of security.

LINUX

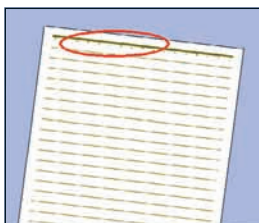
Custom KDE icons

KDE, like many non-Microsoft desktops, enables you to choose your own themes and icons. Anybody who's played around with KDE's Control Center will know that there are many variations on themes, icons, windows, decorations and so on. You can find icons, windows decorations and all manner of things freely available on websites such as www.kde-look.org. However, if you want to change a specific icon, you need to know which one it is and where to find it. In the screenshot on the following page, you can see the menu button, with tux replacing the KDE icon that's usually there. In Redhat Linux, you will find the Redhat logo, and the same goes for a number of others. So, how is this done?

First of all, you need to choose your logo – here, I used a tux with a transparent background that came as 128x128 pixels. I loaded it into The GIMP and (having created a copy), right-clicked on the image and, in the menu, choose Image|Scale Image. In the 'New Width' box, type in the new value and press [Tab]. The value will be copied to the 'Height' box automatically. Next, I saved the new image as kmenu#.png where # is the size. The sizes you need to generate depend on how extensive the icon theme that

Working Methods Low-tech from Japan

Japanese exercise books are an excellent way of staying organised



Japanese exercise books feature rows of dots, which are useful as guides when drawing tables or charts.

Japanese exercise books are useful for making notes while operating your computer. Keeping notes is a working habit that we cannot recommend too highly. Let's not have any of this 'paperless office' in this respect: there's nothing to match having a nice, physical log book with scribbles in it that may become extremely valuable at any moment (such as when your system crashes and files are lost).

We've found these to be a most valuable aid for note-taking around the computer, and they're just a variant of the old school exercise books. We've often seen lined exercise books available in high street stores that sell

oddments of books and stationery, often with garish football or racing scenes on the cover. These thin books, about 19cm by 26cm, usually have medium spacing between lines, and feature a row of dots along the top and bottom of each page.

Some Japanese text in former times could optionally be written vertically as well as horizontally – a practice which is still not quite dead today. The dots at the top and bottom of each page are there to make it easy to draw nice, accurate vertical lines to guide old-style text, and they can be employed equally well as guides for drawing rough tables, charts or diagrams.

These exercise books are a convenient 40 pages long. Keep a few active at a time, plus an extra one to serve as an index. If you develop a flowchart for a macro, number its page and record its title and book and page numbers in the index, under the initial letter of the title. This can help us to recover information that you would no doubt have lost otherwise.

If you can't find useful notebooks like these, consider designing and printing your own, using your own computer's printer. We suggest that you use simple copier paper (you don't require perfect print images), and set it to draught quality if that mode is supported. ■

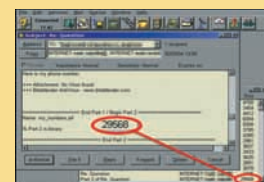
EMAIL Viruses

Virus writers try all manner of tricks to con their recipients into bad practices

It appears that virus writers have noticed that mail filters will often scan emails for viruses, putting into quarantine any that they find. So, having seen that the suspect mail has apparently been scanned and declared safe, the recipient opens the attachment with a certain degree of confidence, running whatever it has in store.

One flaw with taking as read the claim that a reputable virus programme has scanned it and found nothing is that the email, complete with bogus claim may have been written by the virus itself – in this case, one of the Win32 Netsky worms – on the gamble that at least some will get through and be run on Windows machines.

If you look at the screenshot, you will see that the highly-secure mail program that we use displays the file size of the attachments separately from the main mail and, in addition, will never run any of them. Here, 29kB seems a little large for a telephone number. Incidentally, the mail program – CIM 2.0.1 – was written for Windows 3.1 in 1995.



Even with bloated word processor files, 29KB is rather on the big side for a few phone numbers.

you're editing is, but common values are 16, 22, 32, 48, 64 and 128 pixels.

Next, you need to put them where they belong, so open up a copy of the Konqueror file manager and point it at /opt/kde3/share/icons/icon theme/[size]/apps. Then, rename the existing 'kmenu.png' file to something like 'kmenu_old.png', rename the appropriately-sized new icon as 'kmenu.png', move it into the directory and repeat for each size. Lastly, with all of the sizes done, go into Control Center and change the icon theme under 'Appearance & Themes' 'Icons' and then change it back again.

One thing you might notice if you use icon zooming is that, above a certain panel size, the home (file manager) icon does not zoom. If you find 'gohome.png' in [size]/actions under 16, 22 and 32 and put a 48-pixel sized version (take the 32x32 one in the GIMP and resize it) in 48x48/apps, KDE will find it, and it will work.

BROADBAND SECURITY

Running with scissors

Q I've just read an article in the business section of the local newspaper that talked about broadband connections in small businesses. The only mention of anything that sounded to me like security was about keeping up-to-



With KDE, you don't have to use the icons that any particular theme gives you – you can choose your own. Check out www.kde-look.org.

date with anti-virus programs – there was no mention of firewalls at all. Are firewalls now a thing of the past? Derick Gaines

A Firewalls are definitely not a thing of the past, especially in relation to broadband connections, which are both fast and permanently on, making you an accessible part of the Internet. Having a broadband connection is a little like having your front door opening directly onto a lay-by on a busy motorway. Anybody can pay you a visit and be off again quickly, and if you venture out too far yourself you might get injured. While virus protection is a vital part of a system if you take

security seriously, it's only one part of the defences you should be using.

Prevention is, of course, better than cure, and while anti-virus products will stop you from running something that has found its way onto your system, it's far better to have a line of defence that will stop it or other malicious software (malware), or even intruders, getting into your network in the first place – a line of perimeter security better known as a firewall.

As we've mentioned before in HelpDesk, firewalls can be placed in a number of positions: on the computer you're using as a 'desktop firewall', as a piece of software running on a dedicated computer that acts as

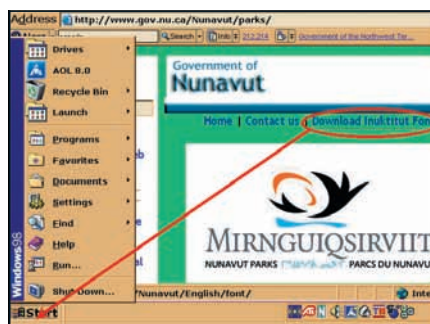
HUNT, PECK AND LAUNCH

The Start menu provides very convenient ways to navigate through the loadable programs on your system. Not only is it responsive to your mouse, but also to individual keys. Why not build a folder within the Start folder, calling it 'Launch' or something similar. In that folder place shortcuts to frequent programs or services, making sure to provide names with different initial letters. You can then load any of these with a few simple keystrokes: [Windows]+[L], and then the initial letter (for example W for Word). Pressing [L] activates your distinctive Launch menu, and the letter selects (and launches) the appropriate item.

INTERNET Bookmarking links



1 As you see a page on the web with Internet Explorer, you may find a link that you know may be interesting, but would interrupt your current train of enquiry. Browsing about a site about Nunavut (the new semi-autonomous section of Canada) we found reference to an Inuktitut ('Eskimo') font.



2 We may well want to look at this font later, but cannot spare time even to glance at it right now. An easy way to 'bookmark' it is to click on it with the left mouse button, hold the button and drag it down to the Start menu launch spot. Keep holding the button.



3 The Start menu will expand and give you the opportunity to navigate and drop a shortcut to the unseen link when you finally release the mouse button. You may like to drop it in a specially-created folder, or perhaps in the Favorites folder. You can now resume browsing without ever having spent time to follow the link.



A simple key combination will instantly clear the desktop, and the same keys will restore it to a state of glorious confusion.

WINDOWS Clearing the decks

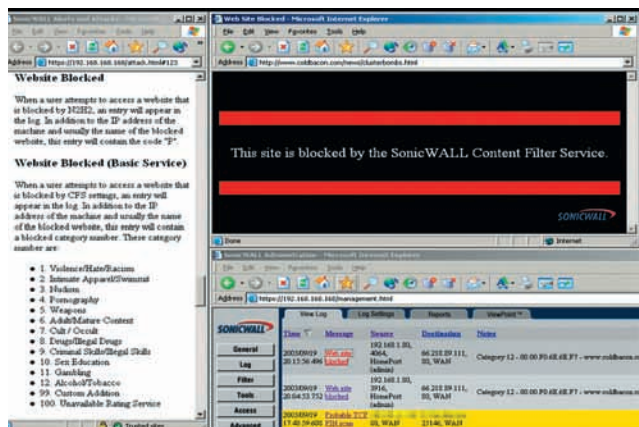
There's a quick and easy way to minimise a stack of active windows

When you have several windows open at the same time, you may wish to 'clear the decks' so that you can select a new program. You can, of course, minimise a whole lot of active windows one by one, which can take a while, or you can just do things the easy way – or in any one of several easy ways for that matter:

1. If you have the Quick Launch menu visible on the Taskbar, you can click on the 'Show Desktop' icon.
2. Right click on a bare patch of the taskbar, and select 'Minimize All Windows'.
3. Press the [Windows] key and [D]

simultaneously (assuming you have a Windows keyboard). [Windows] +[M] will minimise all windows, but [Windows]+[D] is easier to remember, as pressing them a second time will restore the formerly-open windows as well.

4. Press [Ctrl]+[Esc] (which will open the Start Menu) and then press [Alt]+[M]. ■



Proper firewalls do more than just hide your internal network IP addresses; they block content, stop attacks and let you know what's going on.

a gateway between the Internet and your LAN (known as a 'software firewall'), or on a specially-designed piece of hardware that can be as small as a network router (these are known as 'appliance firewalls'). The more programs you have running on a firewall, the easier it is to break into it and take it over, allowing the intruder access to your LAN; desktop firewalls, therefore, are the least secure.

Just to make things a little more interesting, firewalls come in roughly three generations depending upon how they look at network traffic: packet filters, which analyse packets just on inbound and outbound addresses and are therefore the quickest; gateways, such as circuit level and application

level gateways that reassemble packets, inspect them and then create new packets – these are the slowest but by far the most secure; and stateful inspection firewalls that look at the packet headers and compare these against known state data for a particular connection, these being almost as quick as first generation firewalls.

With regard to security, stateful inspection can be enhanced by making it look at the headers on a number of different layers (Stateful, Multi-Layer Inspection, SMLI, in Checkpoint's Firewall-1) and the data contents of packets as well. But, as this effectively pushes it towards application level inspection for some protocols, it slows down the process, even though it's still only a packet filter, passing the original packets through to the LAN.

One thing that's often passed off as a complete firewall solution is Network Address Translation (NAT). However, on its own, NAT does not a firewall make, and you can run firewalls without NAT. NAT essentially makes it appear from the Internet that all communications come from a single IP address, but firewalls do more than just NAT. Properly configured, a firewall will block out direct (including distributed) attacks from the Internet (such as 'ping of death', 'sub seven', 'Land' and so on). It will also filter out unwanted content such as ActiveX, Java, JavaScript (leaving

the rest of the web page intact) and block specified web pages, filter out spam, viruses and so on, not only from web browsing but also from email and any other communications. In addition to this, they'll let you know when anything is amiss by emailing or paging you.

The question is, how much security do you need? For a small business or serious home user, a stateful inspection appliance firewall should be sufficient – we find SonicWALL's web interface makes it the easiest one to use – but if you're dealing with information that could be worth a lot of money to somebody else, you should really use an application-level gateway.

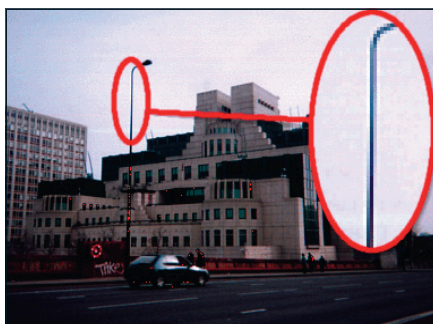
WEB SERVER

Peculiar log entries

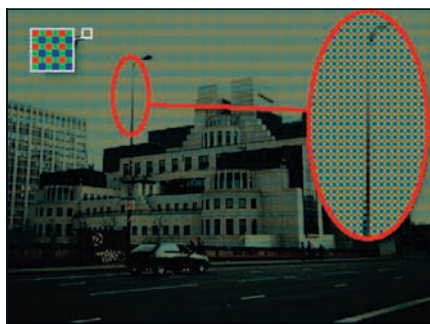
Q I have my own Apache webserver, with a link to its pages from my homepage on my ISP's website using frames. When looking in the access log file, I occasionally see entries with a request for 'default.ida' followed by many 'X's strung together in an impossible request. Is this someone just messing around, or is it more sinister than that?

A This is Code Red, which is still active after all this time. Believe it

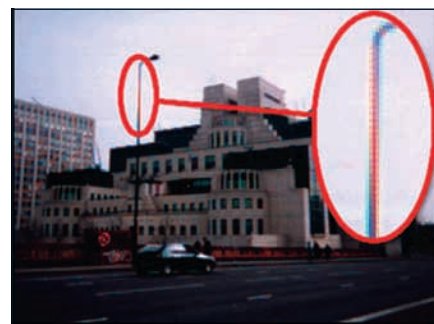
GRAPHICS On the fringe



1 Meredith Foster asks about the so-called 'effective number of pixels' in digital cameras and how this relates to the blurry, peculiarly-coloured images some cameras produce. Above is a photograph of a famous building in London near Vauxhall bridge. You can see that the lamppost does not follow the line of pixels, and goes over into an adjacent column.



2 This is how the camera sees it through its Bayer mask. Each cell picks up only red, green or blue – with twice as many green cells. To get the missing information, the camera interpolates adjacent cells to form the pixels. This is fine for images where transitions between areas of contrasting exposure occur over several pixels.



3 Here we see the reconstructed image with the camera's guess of what the interpolated information looks like. The lamppost which, in the enlarged portion, covers a column of blue cells is given too much red and as it crosses over, changes hue. More expensive cameras use better correlating algorithms to try to eliminate this, but it's always a guess.

TOP TIP

Obvious though it might sound, stick clear labels on the backs of your mains plugs, so that when you want to unplug one you don't kill the server with the 480-day up-time.

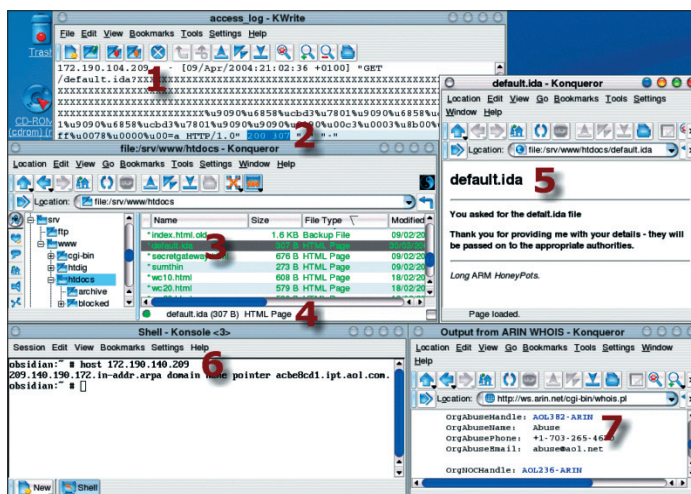


or not, Code Red appeared in July 2001, exploiting vulnerability in Microsoft's IIS webserver software that was identified a month earlier. I still see these in my Apache access_log file nearly three years later, indicating that there are still vulnerable/unpatched IIS servers out there that are becoming infected. If you look at the line in the log file, you will see that in the request there's the name of the file, 'default.ida', which is expected to be on your web root by default, followed by 224 'X's and then some gibberish – the question mark between the file name and the 'X's passing the latter on to the file. This fills up the input buffer of the Indexing Service API, and then writes some new machine code beyond the end of the buffer, overwriting the existing code (a buffer overrun caused by whoever wrote the code failing to write a bounds check). By doing this, when the computer jumps to what it thinks is the code that should be there and starts executing it, it is in fact executing code that's been written there by Code Red, or whoever sent the code.

Buffer overrun exploits like this usually take advantage of the rights given to the program (in this case the IIS server) or manage to get root privileges ('system level access', as in this case) so that it can do something or provide a means of doing something, such as creating a backdoor, at a later date.

Code Red, like many other worms, doesn't actually know that you're running a server on that IP address, and the fact that you have another website that points to it is irrelevant if it's Code Red. As you're running Apache, you're not vulnerable to these attacks, and you can do one of several things, including just ignoring them or, as some on the web suggest, sitting back and laughing.

However, it could be somebody running a script trying to attack your specific machine, which is why you're probably better to take some action. In the numbered screenshot above you can see (1) the Apache access_log file (here running on a server under Linux) with the offending line, wrapped to get it all in. At the beginning is the offending IP address, and then the date and time. Following that, there's the



Using your server log and whois, contact the appropriate ISP and let them know what their users are up to. Hackers and infected machines – they both need dealing with.

request: "GET /default.ida?XXXX..." followed by (2) the error code – 200 – and the number of bytes transferred in the reply – 307. At the end are two fields that tell the server what browser the end user has. Normally, on Apache servers, this request will cause a failure code, but we have an error code of 200, which means success. In this case, there's a file called 'default.ida' on the server root (3), and it happens to be 307 bytes long (4). It is not, however, what Code Red or some script kiddie was looking for, as it's an html file. Internet Explorer, Konqueror and so on, will look at the contents of a file and display it in the most appropriate way, so if it finds a html file, regardless of the file extension (.ida in this case), it will display it properly (5), which, in this case, might be enough to make an attacker think again.

So, as we have threatened to notify the appropriate authorities, we should really do that – stopping this type of activity can only be good thing, so if everybody did it (or made sure that their machines were patched properly in the first place), the Internet would be a far better place. Armed with the log line containing the IP address, date, time and activity, we can now either use 'host' (on Windows machines, use 'nslookup <ip address>') to find the domain name (6), and then look it up using a browser, or you can go

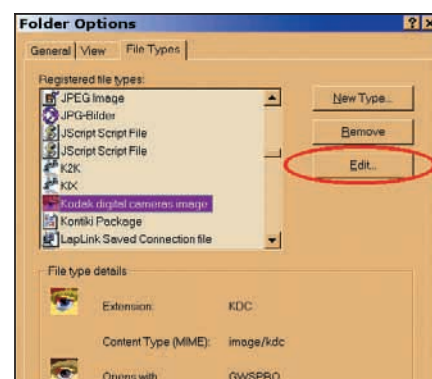
to one of the four main databases (RIPE APNIC, ARIN or LACNIC), type in the IP address and find out the abuse email address (7).

WINDOWS EXPLORER

Typecast

Q Can I change the description of the 'type' of file shown with Windows Explorer? A couple I have are virtually advertisements, and could benefit from being shortened. P Elveston

A You can change the file type descriptions to anything you like without fear of interfering with their use by programs. In Windows Explorer, pull down the View menu and choose Folder Options at the bottom. Now activate the File Types tab, select the file type whose description you want to change and press Edit. Now you can type in a new description. It's probably wisest to keep the description fairly short, so there's more room in Explorer's display area for long filenames when you look at file details. **PCP**



Further Help

If you need an updated driver, or help direct from a manufacturer, first check its web site. A search engine should be able to locate it – try www.google.com.

A list of Internet addresses of many leading hardware and software manufacturers is published on the SuperDisc every month. See the HelpDesk page on the SuperDisc for details.

Newsgroups are also a great source of help and advice. Your question may already have been answered, so before posting a message search previous postings at http://groups.google.com/advanced_group_search. And don't forget PC Plus' own forums at www.pcplus.co.uk.



Related files on SuperDisc
See section: HelpDesk

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Open Tech Support is a not-for-profit, volunteer-driven site that promotes free technical support, as well as a fun community for both techies and newbies to converge upon. It's driven by a collection of forums, where you can post a question yourself or simply read through what others are posting.

This month **Simon Pickstock** deals with a graphics card that doesn't want to play, and solves the riddle of the beeping BIOS

GRAPHICS CARD

Graphic problems

Q I have a PC with a 1.2GHz AMD processor and 256Mb RAM. I used to have an NVIDIA TNT Riva Ultra graphics card, but I bought my son the games Halo and Need for Speed Underground for Christmas, and I knew that the old graphics card would die trying to run these, so I bought a new one, an MSI NVIDIA GeForce FX5200 128MB.

I was told that this was a lower-end card, but that it should be able to run these games without any problem. After installing the card and the latest drivers I loaded up the games. Halo will work, but only after I have played around with the Hertz rate in the program and on the desktop. NFSU runs but the road comes out a carpet of reds, greens and blues.

I thought that maybe the card was not powerful enough, but on further examination even video files that I have taken off our video camera through a FireWire port play in red only. They worked fine on the old TNT. It's as if the card isn't picking up the correct settings when I run something. The old TNT graphics card would change screen settings each time it ran a program whereas with this card I have to do it manually.

Luke Gamble

A Although you've told us that you've used the latest graphics card driver, we would urge you to look at the drivers again, because the problem that you describe is almost certainly a driver-related issue. Pop along to www.nvidia.com, click the Download Drivers button and fill in the three-step boxes to get to the correct drivers page. Make sure that you select a WHQL-certified driver. Currently, Version 53.03 is the latest available that meets this criteria.



Struggling to get the right colours on your games is indicative of a graphics card driver problem.

MAINTENANCE

Hard disk health

Q Can you please suggest to me a few things I can do to get the best performance out of my hard disk, and tell me how I should maintain it in such a way that it produces the best results? My technical knowledge in these things is quite limited, so I'll be thankful if you could explain it in simple terms.

Nora Field

A As you claim to have limited technical knowledge, we'll stick to the basics. The best way to keep your hard drive healthy and operating at its optimum is to keep it clean and keep it defragmented. Regularly go through your drive and uninstall software and documents that you are no longer using. However, only uninstall files if you are sure of what they are, to avoid the risk of removing something important.

To run the Disk Defragmenter, go to

Start/Accessories/System Tools/Disk Defragmenter and highlight the drive in question, then press Analyse. You will then get a report of whether your hard drive needs to be defragmented. Before running the Disk Defragmenter tool make sure that you've closed down any other programs, especially anti-virus software.

Hard drives become fragmented as you create and delete files and folders, install new software, or download files from the Internet. Computers typically save files in the first contiguous free space that's large enough for the file. If a large enough free space isn't available, the computer saves as much of the file as possible in the largest available space, and then saves the remaining data in the next available free space, and so on.

After a large portion of a hard drive has been used for file and folder storage, most of the new files are saved in pieces across the drive. When you delete files, the empty spaces left behind fill in randomly as you store new ones. The more



Simon Pickstock

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Simon's meteoric rise in publishing continues as he assumes the helm on PC Answers and PC Upgrade. In his spare time... oh no, he doesn't have any spare time!


<http://forum.pcplus.co.uk>

fragmented the volume, the slower the PC's file input/output performance will be, and so regular defragmentation will help to improve performance.

COMPONENT PROBLEMS

BIOS beeps

Q When I start up my computer, there's a long beep and nothing is displayed on the monitor. An online technician suggested that this sound was caused by a faulty graphics card. However, a technician who checked the machine on-site found that there was nothing wrong with the AGP card, or the SIMM memory cards. What's wrong?

DB Reyes

A On the motherboard is a chip containing the PC BIOS (Basic Input-Output System). The BIOS gets all your hardware devices talking to each other and enables the PC to start. If it finds a problem with any of the hardware components that prevent it from starting, it emits a coded beep that communicates where the problem lies. The piece of information you are missing is what the single long beep means. This varies depending who the BIOS manufacturer is. You can get information on interpreting BIOS beeps by visiting www.bioscentral.com.

FREEING UP IRQs

Fun with FireWire

Q I recently bought a digital camcorder and got a copy of Pinnacle Studio DV, which comes with video-editing software and a FireWire card. I've been trying to get this up and running following the instructions in the manuals. From what I can make out I need to try and free-up an IRQ for the FireWire card, but I'm unsure how to do this. Could you please let me know whether or not this is a relatively straightforward job, or whether I am barking up the wrong tree? I have a 1GHz PC with 256MB RAM, an 80GB hard disk and Windows Me. Dave Weakes



Many video editing packages come with the necessary hardware for hooking up your camcorder to your PC, but then they are subject to potential IRQ conflicts.

A Without specific information about the issues that you're facing it's difficult to determine whether you are barking up the wrong tree or not. However, there are circumstances when freeing-up an IRQ for your FireWire card could resolve performance or connection issues.

There are many different ways in which you can free-up IRQs, and below is some general advice on how you can do this. Performing the steps outlined here may require you to provide some additional information about the device that you are trying to configure, so be sure to have the documentation to hand for any other components, and preferably your motherboard manual as well.

The first thing to try is to put the Studio DV card into a different PCI slot. Most computers will then reconfigure the IRQ assigned to the various PCI peripheral cards in your computer. This may not free-up any resources, but there's the possibility that the computer may assign the Studio DV card to its own IRQ, and eliminate IRQ sharing with another device.

If this doesn't resolve the issue then you should try disabling any unused devices. Many users don't utilise devices such as the USB port, second IDE port, IDE port on a soundcard, and so on. These devices may be on the motherboard, rather than being plug-in

components, and if so they can be disabled in the motherboard BIOS. If you have a modem, second serial port or any other device that you're not using, it could also be disabled to free-up resources.

Sometimes a soundcard will use multiple IRQs, so if this is the case you can try reconfiguring it to use fewer resources. In Device Manager, go to Sound/Video and Game Controllers. Find your soundcard driver and double-click it. Select the Resources tab, and uncheck the box marked Automatic Settings. The 'Settings based on' option will then activate, and you can choose a different configuration, such as Basic configuration 0001, 0002, and so on.

If your graphics card is assigned an IRQ, see if your motherboard BIOS supports turning off the IRQ assigned to it. If it does, then turn off the IRQ assignment (note, however, that by no means all motherboards support this facility). This will enable Windows to assign the IRQ, rather than the BIOS forcing it to use a specific one, which may enable it to be managed better by Windows and therefore free-up resource conflicts.

If you're still experiencing problems then there's a wealth of support and user forums available at www.pinnaclesys.com, where you may be able to find an answer. **PCP**

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StorageReview.com

www.storagereview.com

StorageReview.com sets out to address a topic that seems sadly neglected in the online community: hard disk and storage-related performance. StorageReview.com attempts to supplement the excellent hardware coverage already out there with news and reviews of storage-related products. An excellent site for all the latest reviews of hard drives.

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This month, **Paul Grosse** shows you how to set up several web servers on one machine by using virtual hosting

MULTIPLE SERVERS

As many as you like
Q My Internet connection is reasonably fast (broadband), and I've configured an Apache server as my own personal website which wasn't too difficult. However, I would like to be able to run more than just the one website so that I can help a local group that I'm involved with, along with anything or anyone else that I would like to help in the future.

I only have one IP address and I would prefer not to spend loads of money on domain names that might end up only being used for a year or so. How do I make sure that the right requests go to the right server? I wouldn't want to have just a series of directories off an IP address. Is this possible?

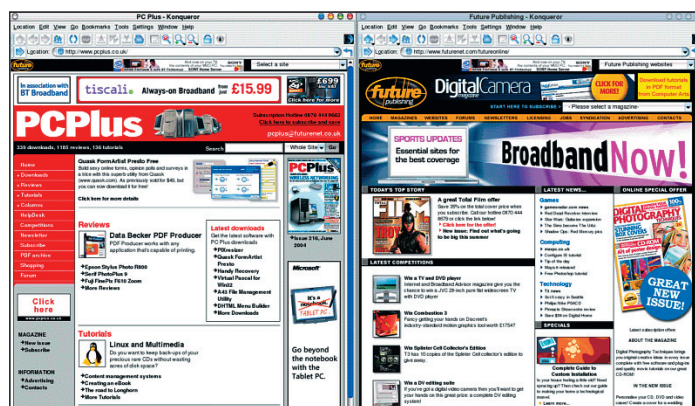
Tony McConnell

A There are essentially two aspects to this answer: domain names; and name-based virtual hosting.

Domain Names

If you want to avoid paying out for a domain name, there are a number of facilities on the Internet that can do this for you free of charge. One of these is DynDNS.org (**www.dynDNS.org**). You can pick a domain and add your own host name to it – having up to five of these, pointing to five different IP addresses if you want. In addition to this, if you enable wild cards, you can have as many as your server can support per IP address.

If you buy a domain name, you can do this anyway. Just to prove that this works, I registered *.info2.mine.nu with DynDNS.org which will allow me to have **www.info2.mine.nu**, **pauls.info2.mine.nu**, **www.pauls.info2.mine.nu** and, if I really wanted, **clear-the-drains.info2.mine.nu**. All you need to do is to set up your server so that it's able to differentiate between the different domains that you want to use – they can be completely different of course.



A large number of websites share IP addresses with other websites. Sometimes, this is done with separate servers, but you can do it on just one if you want to.

One thing that you will have to do, is get other people to put links on their sites, using your domains or, if it's for a local action group, make sure that it's mentioned in letters, leaflets, press releases and so on. Another route to popularity is to get it onto various search engines – these usually provide a form to fill in and when you inspect your access log, you will be able to see when they have visited your site.

Name-based vhosts

You can either have IP address-based virtual hosts or name-based virtual hosts. If your firewall is set up so that it listens to several IP addresses, each with their own domain name, you can point them at your server and configure it to treat them differently. However, with IP addresses being a limited resource, and if you are not planning on having a 20GB per day site, it's better to have a single IP address and use name-based virtual hosts.

So, with an external infrastructure established, pointing at your server and, with your firewall configured to pass incoming port 80 traffic to it, you just need to configure the server to show different websites according to the URL that has been requested.

As you already have Apache configured we don't need to go into this in detail – details of how to do this

were given in HelpDesk Extra in issue 213 for Apache running on Windows, and it's fairly similar running under Linux except that the OS's security is better, and the file structure slightly different. There is another difference: if you add more storage, you can mount it where you want in the /srv tree without any server reconfiguration – covered on the SuperDisc in issue 217.

In the httpd.conf file under section 2, you defined the default configuration for your main server – directory access, permissions, aliases, functionality, error and access-log file names and structure; and so on. In section 3, you get to play around with name-based virtual hosts. These aren't as bad as they sound, and can be very easy to configure. The lines of directives in the httpd.conf file in the screen shot on the right isn't a part of the virtual host section, it's all of it. You will notice that there are four parts to it:

- 1 The NameVirtualHost directive
- 2 Three virtual hosts.

The NameVirtualHost directive tells Apache that you intend to use name-based virtual hosts, and the wild card after it doesn't tie the server down to any particular IP address.

The three sections after that all take the same format, but do different jobs. One thing you'll notice is that they replicate and therefore override some

**Paul Grosse**

paul.grosse@futurenet.co.uk

Paul started computing back in the dark days of coding sheets and punched cards, and believes there is more to computing than rocket science


<http://forum.pcplus.co.uk>

of the directives in the default server configuration that you defined in section 2. In that section the error and custom logs were defined as 'error_log' and 'access_log' respectively. In the first virtual host block here, they're defined as 's1error_log' and 's1access_log' respectively. The server name is also server1.workgroup with various aliases defined in the line below. These are internal names and have the effect of:

- 1 error_log only contains lines relating to apache starting up and shutting down – 'Accept mutex:', 'caught SIGTERM,' and so on;
- 2 access_log remains empty – this is the default name for the file, so if there's ever anything in it, you have an idea that someone might have got in;
- 3 s1error_log contains all of the errors caused by zombie servers and script kiddies trying to hack into your system – the reason that they're here is because they used your IP address instead of your domain name; and,
- 4 s1access_log contains all of your accesses from the internal network (unless you have made your internal network name the same as your external one). If you're compiling statistics you have all of these lines out of the way and you can concentrate on what you really want to know.

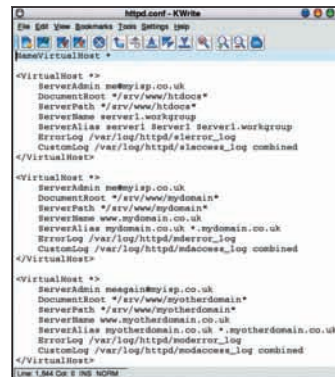
The other two virtual host blocks in the screen shot contain the details for two websites that are on the host – there's no reason why you should limit yourself to just two though.

Structure

Each block starts off with <VirtualHost *> which doesn't define an IP address. Following this, each block has the definition for:

- the ServerAdmin's email address;
- the DocumentRoot and ServerPath which are the same -- if you want to eliminate one, just remark the line out with a '#' and start the server again, checking that all works well for the default server and the virtual host that you're playing with;
- the ServerName and any ServerAlias so if you want several URLs to point to that virtual host, you can do it here -- note that there's no reason why a URL should start with 'www:';
- the ErrorLog and Custom_Log definitions along with any special file formats; and,
- at the end, the closing </VirtualHost>

The last two virtual host blocks here make the server respond to their respective URL requests by providing their own websites from their own directories. If any user does something that causes an error on that website such as requesting a document that doesn't exist, or trying to hack it in



In the bowels of the httpd.conf file, close to the bottom, you will find the virtual hosts section. Setting up a few virtual servers is as easy as this.

some way, it will be logged in its very own error log file.

Whilst it isn't at all necessary to have separate log files, the advantage of doing so is that you can analyse site access easier using, for example, Webalizer which will provide a monthly or day-by-day breakdown of hits, visits, pages, KBytes and so on, so that you can monitor each site's performance and, if it's your intent, provide billing information. You can also track people's visits through any particular site and use that information to improve the design and navigability of it. You can find out more about this on this month's SuperDisc. **PCP**

SECURITY

As with any continuously-on Internet connection, you should be protected by a firewall – something that by default blocks all inbound requests unless explicitly asked to let them through (say on port 80 for http). As the barest minimum, this can be a desktop firewall as this at least provides a minimum level of protection. Better is a firewall on a separate machine preferably one that only runs the firewall. Some routers run NAT (Network Address Translation aka Masquerading) and whilst firewalls can do this; on its own, NAT isn't a firewall. Don't rely just on NAT.

External access – Solving the problem

Seeing your websites from the outside can represent a number of problems

One problem with setting up a webserver, virtual hosts or not, is being able to see it from the Internet. Worse than that is if you are running virtual hosts – have you managed to configure it so that the logs record the site hits to the relevant logs correctly? If you have two URLs, you will want to log into them to check that it's all working properly but if you are on the inside of the firewall and just type the URLs, you will most likely not be able to connect and typing the internal name of the machine will not get you the right results anyway. So, the question is, what do you do?

There are a number of things you can do: One of them is to use a machine with a dial-up connection (and its own firewall). Configure the browser in it to use the dial-up connection, unplug it from your LAN – not just in case it might want to collect data from that but if it becomes compromised, any intruder would not then have access to your LAN – type in the appropriate URLs and see what you get. You can also look at your server logs to make sure that things are working the way they should.

Another way, that is perhaps easier, is to use one of the anonymous surfing proxies that are on the Internet. One is

proxify.com. Just go to the site, type in the URLs and away you go. Many such proxies do not facilitate the downloading of images but proxify does. Again, you can check your logs to see that it's all working correctly. One word of warning about proxies though – and this is general – if you need to type in a password to gain access to certain parts of your site, you need to be able to trust the proxy explicitly and whilst many sites are run by people you can trust, there is no way of telling for sure and it's worth setting up a temporary user/password just for testing that you can delete when you have finished. ■



Anonymous proxies such as that at proxify.com can provide you with useful information about the way your sites work.

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This month we've got a money-making opportunity for the Beeb, an inspired student of Russian and a case of teenage laptop angst

Ripping yarns

I would like to highlight what I think would be a major opportunity for a software developer or more likely, the BBC. Like many people I use the BBC Radio's excellent 'listen again' feature. This has some drawbacks – I can only listen while I'm connected to the Internet, and I must be connected for the length of the program. I also have to be using my computer, but I'd rather put the program on an MP3 player and listen to it in bed, or on the bus.

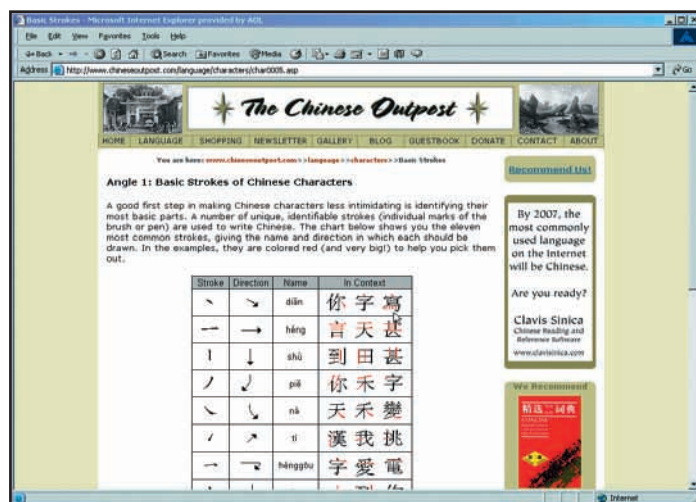
This has become a more pressing problem for me, because I'm due to emigrate. I'll have no reception for the BBC, and Internet access will be 6p a minute!! So I've attempted to find a solution to my problem. I can record the program while streaming using TotalRecorder, although this still takes as long as the full length of the program,

or I can 'rip' the Real Player stream using StreamBox, although this seems to take about twice as long as the program itself.

No solution so far then, so can some enterprising programmer please come up with a fast and reliable method of ripping the stream?

Come on BBC, you're missing a trick here. Make the programs available in MP3 format – I for one would be quite happy to pay! Arguments about making copies of programs don't really apply, as I can do that using a tape recorder. A valuable new revenue stream for the BBC could be possible given the growing archive of material available, and assuming that the pricing is right.
Martin Fisher

Editor, Ian Robson, replies: The reason why the BBC and several other content providers choose streaming media as a method of broadcasting via the Internet is to make copying all the more difficult



Our resident languages expert Huw Collingbourne has found that the Chinese Outpost provides a good introduction to the fundamentals of Mandarin (see PC Plus 216).

to achieve. As you say, recording using a tape recorder is still viable, but then transferring back to a portable digital format can be quite a convoluted process. The digital methods that you describe still take the length, if not more, of the actual program. But then these obstacles are put in place in an attempt to reduce casual piracy. Although you are clearly keen to pay for your content, the BBC is also keen to protect its lucrative distribution licensing deals, at least until a more fool-proof copy protection for MP3s is in place. I for one think the BBC should consider its responsibilities to serving the British licence-paying public, and make its archives more easily available on this basis. It would, of course, make a decent income from the potential revenue stream, but then the licensing guys at the BBC may argue differently.

Back to school

I've just read Huw Collingbourne's article on language learning with a PC, featured in PC Plus 216. While I spend a

lot of my working day (and some of my spare time) programming, it was good to see some unexpected coverage of one of my other interests. I congratulate you on including some interest and variety in the magazine (as usual). It's these kinds of articles that make PC Plus stand out from its competitors. Having spent a lot of time learning computer languages, rather than human ones, I made a decision to branch out and learn Russian – like Huw, I had opted for a language that sounded more interesting and exotic. I had used books and tapes, and had made some use of multimedia software and websites, but the article did impress upon me that I could make much greater use of my PC. I've been inspired to conduct a few new Internet searches, and I've come across several new learning resources that I had previously overlooked, including a site with Russian newspaper cartoons that has provided some enjoyable material for translation. I'm learning and having fun at the same time! Thanks for all the ideas included – I'm looking forward to future instalments.
Nick Dunn



BBC Radio Player allows you to listen to programs on demand, but you can't download them.



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Ian Robson

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Ian Robson is the editor of PC Plus. When computing first got on to his school curriculum back in the early 1980s, he was hooked



www.futureforums.co.uk/pcplus

Editor, Ian Robson, replies: While PC Plus is first and foremost a professional computing magazine, it would be imprudent of us to overlook the likelihood that the PC Plus readers have other interests. That said, the opportunity to combine further education with the use of computers in a tutorial was an inspired idea. Huw came up with that one, and we have a few other bright ideas up our sleeves, but if any reader feels that we can cater for their needs more specifically, then drop us a line and we'll see what we can do.

Web advice required

I've been reading PC Plus for about 10 years now, and I've been subscribing for most of this time. It's a fantastic magazine, and in my opinion the best of the lot with good reviews, but also tutorials and classes for those who would see themselves as experienced users/programmers.

For a while now I've been thinking about setting up a hosted website with a dedicated URL. On the web I can find packages at all kinds of prices, with all kinds of limitations. I would appreciate a tutorial, perhaps similar to the feature on wireless networking one in PC Plus 216 that shows the process, and explains what choices are available, and what to watch out for, possibly with some direct recommendations (from easy but expensive to tricky but cheap).

Dr Stephan Reiff-Marganiec
CITP MBCS, Lecturer Department of Computer Science, University of Leicester

Editor, Ian Robson, replies: This and many more of this style of feature have been requested by like-minded readers and as always, we adhere to your requests. This specific subject will be covered in the coming months, but as a taster for the style of feature, next month we'll be covering the tricky subject of disaster recovery.

Study time!

I'm a student at a private school in South Africa. It's the school's policy that Grade 9 students should have laptops, and I've got a problem – my big

PRIZE-WINNING STAR LETTER

Spam is the real menace

Firstly I would like to make it clear that I've never downloaded any music from the Internet, but I note with dismay the actions taken by the Recording Industry Association of America (RIAA) to take European music downloaders to court.

However, we're supposed to have anti-spam laws in Europe, so why don't the so-called enforcers take legal action against the American companies who allow other people to fill our inboxes with junk emails promoting their products? Say firstly a hefty fine, then double it for a second offence and, if they continue, a European ban on the companies' products? If it were Europeans who were filling up

American mailboxes then I'm sure something would have been done before the problem reached its present levels. So much for the Special Relationship!

Hank Wells

Editor, Ian Robson, replies:

I think you will find that it's the BPI (British Phonographic Industry) that's 'considering' prosecuting UK citizens with information garnered from the RIAA, with independent governing bodies in other European countries taking similar action. While the RIAA could file suits in the UK and mainland Europe, it has chosen

the more tactful route, although you could argue that making criminals of your customers is in itself rather tactless behaviour.

To be fair, the BPI is simply attempting to send out the message that illegal downloading is a bad thing, and point out that conduits for legal downloading are in place. It's the mass downloaders/file sharers that really concern the industry, and unlike in the US, where a minor was subjected to the full force of the law for making a few downloads, the BPI is keen to assure us that only the 'major' criminals will be targeted. No action is pending, as yet...

Win a fantastic set of Creative peripherals!

PC Plus has teamed up with Creative Labs to offer the writer of each month's Star Letter a fantastic set of peripherals worth £140. The winner will receive a Sound Blaster Audigy 2 NX USB 2.0 sound card. This unique device features 24-bit/96KHz playback, and support for

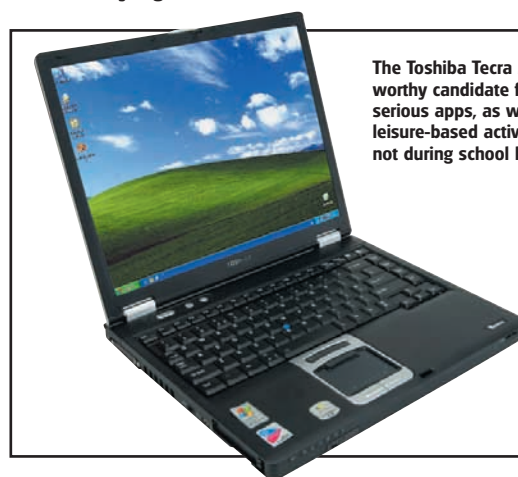
7.1 surround sound. The generosity doesn't stop there, however. Pen our most interesting letter, and you'll also receive a superb Creative Webcam NX, which boasts resolutions of up to 640x480, automatic exposure, and white balance control. So what are you waiting for? Get writing!



brother already has a laptop which I can use, and my dad refuses to buy me a new one in time for Grade 9. The laptop is a low-spec machine – 1GHz Pentium III, 256MB RAM, on-board graphics and 40GB storage. My dad argues that this is perfectly fine for office applications, but I want to play games with the laptop as well. The present Grade 9s have a 1.6GHz Pentium M, 512MB RAM, 40GB Storage, WLAN, and some have Mobility Radeon 9000 chips. The games run smoothly on their laptops, albeit with lower settings turned on. So all the other students will get new laptops and I'll be left behind, playing Minesweeper or Solitaire. Please come up with an argument I can use on my dad that Centrino laptops are better than their Pentium III counterparts, and even

though office applications won't run faster, there will be a general speediness in overall programs.

Chris Rooney (aged 16)



The Toshiba Tecra M2 is a worthy candidate for all-round serious apps, as well as some leisure-based activities – but not during school hours Chris!

FROM THE FORUMS

Identity crisis

ID CARDS – A SOLUTION LOOKING FOR A PROBLEM?

JON.THOMPSON120966

What do you all think of Blunkett's plan to make us all carry ID cards?

MOPHP

If it's opt-in, it won't work. Plus, if I have to pay, I won't get one if I don't have to. I don't really think it's going to do any good just to 'prevent terrorism', but it should serve as general ID for proof of age, passport and driving licences and so on.

JON.THOMPSON120966

The claim is that they're going to be compulsory, and the Home Office is going to charge us about 40 quid each for the privilege of being made to turn up to an office and have our photographs taken, fingerprints taken and our retinas scanned. This may be the first time the Government has tried to charge everyone for reaching a certain age.

APOTH

All it takes is one person on the inside, or one exploit, and the whole thing's up the creek. Technology always has flaws – best-case scenario, any breach is discovered and an awful lot of money is wasted (standard government practice then). I can imagine people's IDs could be cloned by anyone who got into the database, which would mean easy access to everything you used to own, as people will trust these ID cards implicitly.

MASTER_OF_PUPPETS

It's the 10 years in prison for carrying a 'false' one that worries me. 10 years is an awfully long time for something as random as carrying false ID. Why would you be carrying false ID? Ask any under-age drinker!

SEPP0

The UK isn't the only country considering a Universal ID. But let's cut to the chase. Does a government have the right to require its citizens to supply identification on request? If the answer is yes, then that government has the right to specify what is acceptable ID, and who will carry the cost. The cost is taxes, either directly or indirectly. There is a second part to the question: How much personal freedom are we willing to surrender in the name of security?

ANDYBAXMAN

Blunkett actually said on TV that the cards would be 'infallible'. Now, anyone who has ever had anything to do with electronic/computer security systems will know that no system ever is.

JON.THOMPSON120966

I've just heard that failure to get an ID card once they make it into law will result in a £2,500 fine.



www.futureforums.co.uk/pcplus



Tiny.com isn't quite the same company as Tiny Computers – it wins awards, for a start.

On Test Editor, Russell James replies:

Obviously there are significant benefits to a Centrino-based machine. Quite apart from a performance boost in games and other demanding applications, you also get the wireless functionality and a big increase in battery life. However, a laptop of this quality will cost at least £1,000 and, as your dad says, there will be no distinguishable difference within office applications. It seems as though your dad isn't looking for a machine that will enable you to play games (especially in school hours!!), so if I was him, I wouldn't fork out for a new one, either. Sorry!

Real old

I feel that I've boobed massively. I bought a Toshiba Satellite laptop, which had pre-loaded RealPlayer software installed. After registering the software, I had so many spams from the developers that I deleted it – thinking that it only duplicated the Microsoft Media Player on my system. However, when I wanted to download programmes from the BBC website, I discovered that I needed RealPlayer software. The Real website offered this to me for £12 a month. How do they justify this cost when the original software cost so much less. More importantly, are there any alternatives? I balk at paying £12 a month to listen to a few of the science programmes that I've missed on Radio 4.

Tom Ward

Features Editor, Richard Cobbett, replies: You can download an older version of RealPlayer from www.oldversion.com/program.php?n=real.

A Tiny issue

In PC Plus 216 you have an advert from Tiny.com for the Tiny Tornado 3400-64T. The specs are formidable and the cost is low. Is there a catch? I remember when Tiny went bust leaving people who ordered computers by credit card reeling from the effect. I know Time has taken them over. Can I have your views on what security one has if one orders that computer from them?

Dr David Antebi

Editor, Ian Robson, replies: It's important to emphasise that Tiny.com is not the same company Tiny Computers, so it would be unjust to suggest that any reputation attributed to Tiny Computers can be directed at Tiny.com. That said, PC Plus can't (as with all computing magazines) make any qualified statements regarding the reputation of a company, we can only report on actual examples of customer service (see Campaign, p25) and leave our readers to make their own assumptions. As with all purchases, make sure you know what you're paying for, including the service and support package, and use your credit card for maximum protection as it's the credit card company that will be your recourse should things go awry.

SC
MAGAZINE
BEST BUY

If you need to encrypt files, folders, email and attachments then you need **DESlock⁺**.

Up to 64 different encryption keys, stored in a Smart card based USB token, allows confidential information to be shared with a large number of exclusive users or groups.

Call us today and find out more.



protect your data.

Need to encrypt something?

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www.deslock.com



Data Encryption Systems

This series	Part One	Part Two	Part Three
Learning A Language With A PC	Choosing a language and making good use of the Internet	Multimedia software for beginners and 'getting by' on holiday	Complete courses for serious learners – and Huw's Chinese challenge!

Courses for serious learners

This month, **Huw Collingbourne** grapples with several packages that claim to be complete solutions to learning a language

Many people have a strong aversion to the good, old-fashioned way of language learning, which involves hour after hour of relentless toil over verb tables and vocabulary lists. In recent times, it has become more fashionable to learn languages 'immersively' by listening and speaking, rather than by studying formal grammar. In the final part of this series, I try out programs that employ varying degrees of immersive and grammatical teaching.

Tell Me More

PRICE £35 (£30 ex VAT) **SUPPLIER** Auralog www.auralog.com
The Tell Me More series of language courses (available from www.amazon.co.uk) promises to take a beginner to quite an advanced level of proficiency. Each product is supplied on one or more CD, along with an audio headset. There are versions available for French, German, Spanish, Italian, Dutch, Japanese and Chinese Mandarin. I tried the Chinese and Italian titles to get a feel for the range.

The courses are divided into graded lessons, based around dialogues in which the user responds to questions posed by a native speaker. The software analyses your voice and indicates whether the answer is recognisable from your pronunciation. You can improve your pronunciation by simply repeating phrases and comparing a voice graph, which

usefully shows the tones and inflections – vital when learning a tonal language such as Mandarin. In the Mandarin product, transcriptions are provided in modern Chinese characters and in phonetic Pinyin, supplemented by lightweight on-screen grammar notes.

The user interface of Tell Me More Italian is much slicker and professional-looking than the older, almost cartoon-style interface

of the Chinese product (only the Japanese product also has this old-style interface). It also benefits from a more structured approach to teaching, which is far more useful to those grappling with new information. This enables you to either dip into exercises in any order, or allow the software to prepare a course of study according to your previously defined learning goals.

This is altogether a more satisfactory and user-friendly product than the Chinese version.

The Rosetta Stone

PRICE £139 to £229 (£118 to 195 ex VAT)

SUPPLIER Fairfield Language Technologies www.therosettastone.co.uk

The Rosetta Stone is a big, professional-looking package available in 24 languages, and it takes an uncompromising approach to immersive teaching.

From the very outset, all instructions and exercises are in the target language. You work through graded sequences of exercises; photographs are shown repeatedly while a native speaker uses words and, eventually, sentences to describe them. I found that I quickly remembered the key words in repeated phrases (so that I could recognise a cat, a young woman, an old man and so on), but was not always able to work out the grammatical construction that would enable me to build sentences of my own. In some cases, the pictures shown are ambiguous. It's not always easy, for instance, to tell whether you're looking at a boy or a girl. As with Tell Me More, voice graphs provide useful feedback on the accuracy of your pronunciation.

While the constant repetition of phrases may indeed help to drum in the words and sounds of the language, the lack of detailed explanations in English left me feeling slightly lost from the outset. I also found the highly repetitive exercises boring, which isn't an incentive to learn.

For a 'language lab' style of learning, this course could provide valuable practice material as an addition to a formal language course. Our verdict is based on the assumption that it will be used in this way, and not as a substitute for formal training. But, in spite of impressive credentials – which include its use by NASA to teach Mir mission astronauts to speak Russian – I am not persuaded that I could ever hope to master a language in all its complexities with nothing but The Rosetta Stone for guidance.

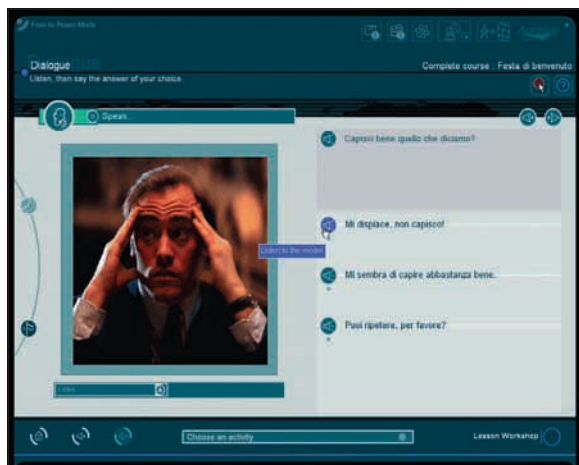
Learn To Speak 9 Deluxe

PRICE £22 (£19 ex VAT) **SUPPLIER** Broderbund www.broderbund.com

Learn To Speak is one of the most established and best-selling language tutorial packages. Each package contains five CDs, four of which contain software, while the fifth is an audio CD containing exercises that you can listen to on a standard CD player. The audio tracks are continuous, unfortunately, instead of being individual lessons.

When you load the program, you are given the choice of following either a basic or a comprehensive course. The basic course aims to help holidaymakers get up to speed with everyday expressions, while the comprehensive course is aimed at the more serious student. This course is divided into six graded levels, and each are subdivided into chapters dealing with specific language and grammar topics. There are vocabulary lists and exercises, optional on-screen translations, and vocabulary drills in which you can view and imitate videos of native speakers. There are also games to

Here, Tell Me More Italian shows the panicked expression of a confused learner during a listen-and-repeat dialogue exercise.



PCPlus Back Issues

Missed an instalment?
Phone **0870 444 8662**
to order your back issue



<http://forum.pcplus.co.uk>



Huw Collingbourne
huw.collingbourne@futurenet.co.uk

Huw Collingbourne can express himself in several languages. The PC Plus team fervently hopes that he'll soon add English to the list

test your comprehension and numerous screens providing explanations of grammar.

This is one of the most satisfactory language tutorials I have tested. Unfortunately, the printed documentation is less complete than in earlier versions. For example, the old Learn To Speak 4.0 came with a hefty paperback manual of more than 400 pages; the current release comes with a reduced paperback of less than 200 pages. Learn To Speak is currently only available for French, Spanish and English. There used to be a German product, too, but I'm told that this has been dropped due to lack of demand – old versions are still available from suppliers.

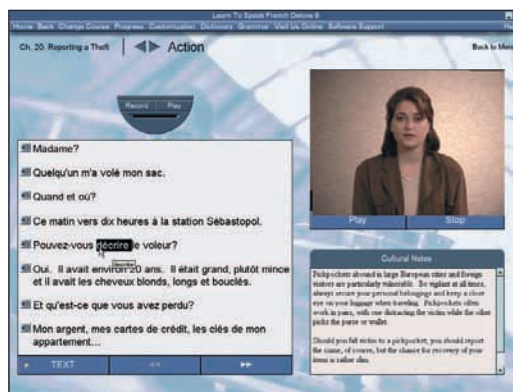
Movie Talk Italian

PRICE £35 (£30 ex VAT) **SUPPLIER** Eurotalk www.eurotalk.com

If you're fairly fluent in a language and want to extend your range or improve your accent, Eurotalk's Movie Talk is a good choice. It's a movie on DVD, which you can watch with or without subtitles. You can even view the entire script in a scrolling pane, clicking a selected line of dialogue to replay it.

To help you expand your vocabulary, there's a built-in dictionary with words taken from the film. When you click a word a voice pronounces it; a still from the film is shown, with the item matching the highlighted word. You can also select words from a list in order to play back a film clip in which that word is used. You get a range of vocabulary and dialogue activities to test your comprehension.

This is a great package for intermediate or advanced learners. I tested Movie Talk Italian, which is based around the film, Mio Padre e Innocente. There are similar packages



Learn To Speak French is one of the best-value courses on offer, though many UK suppliers stock out-of-date versions.

based around films or TV programmes in French, English, German, Greek and Spanish.

Summary

While I have been impressed by some of the packages on test this month, I'm not convinced that they could substitute for a good, book-based course. Colourful on-screen graphics and friendly voices may make language learning seem less formidable than a text, but languages are complex and demand effort from the learner. A good multimedia package may be useful for improving your listening comprehension and speaking skills, but to master grammar you can't beat a good book – or, better still, a good teacher. **PCP**

GOING FURTHER

Whether or not you opt for a computer-based language course, it's also worth considering some of the book and audio CD (or cassette) packages available. The BBC produces a number of excellent courses supplemented by TV broadcasts. I have followed its Italian (Italianissimo) and German (Deutsch Plus) courses, each of which comprises a good mix of immersive and grammatical learning. Other quality courses include the Ultimate series from Living Language (from personal experience I can recommend Ultimate Italian) and, of course, the immensely popular Teach Yourself range of courses.

NEXT MONTH

Next issue, we'll be embarking upon a new Masterclass series – watch this space.

Colloquial languages

In a last desperate attempt to learn Chinese, Huw pits his PC against a paperback

Colloquial Chinese (Multimedia Edition)

Price £43 (£39 ex VAT)

Supplier Routledge

Info www.routledge.com

Having struggled to gain even a basic mastery of Mandarin Chinese over the past couple of months, I finally turned to Routledge's multimedia course, Colloquial Chinese. This complements a paperback book of the same name, and similar multimedia courses are available for learners of Portuguese, Spanish and French. For the sake of comparison, I tried out the multimedia Colloquial Chinese course alongside the Colloquial Chinese book pack (which includes audio lessons on both cassette tapes and audio CDs).

Colloquial Chinese Multimedia comprises 14 sequential lessons, in which spoken dialogues are

accompanied by scripts in phonetic Pinyin and in simplified Chinese characters. You can listen to a complete dialogue or a selected expression, with or without the English translation. Language points and vocabulary can be displayed in windows, and there are numerous exercises you can complete to test your understanding after finishing each chapter.

The actual content of the multimedia course is almost identical to that of the paperback book (which isn't included). While the software has the added benefit of interactivity, it does have the obvious disadvantage of being less portable than a book. It's also quite old, having been released in 1998 for Windows 95. It has to be said that even though it runs on modern versions of Windows, the user interface of this software looks quite old-fashioned. The

Colloquial French Course, which I also tested, unfortunately suffers from the same deficiencies.

So how does this multimedia course compare with the others reviewed this month? In short, its user interface is pretty naff, but the actual content is good. The main feature it lacks is a pronunciation graph to compare with the ones in The Rosette Stone or to Tell Me More. Apart from the addition of some colourful graphics, the multimedia course has nothing of much significance that you won't already find in the book and CD pack, which retails at almost half the price (£26, or £22 ex VAT). I must say that I've found myself using the book and audio CDs much more frequently than the multimedia CD. Faced with a choice between the two packages, the book package wins hands down. ■



The multimedia version of Colloquial Chinese has a clunky user interface, and it compares badly with the printed version of the course.

Sharing media with eMoviX

PROJECT TIME



1 HR 30 MINS

SKILL LEVEL



2 BEGINNER
You just need to be
able to burn CDs

YOU'LL NEED THIS



Digital video files,
CD writer, software
from cover CD

FILES ON SUPERDISC



Any files you need
to complete this
Masterclass are on this
month's SuperDisc

In this one part Masterclass series **Frank Charlton** takes a closer look at the ultimate solution for sharing digital media files

We've seen just how good Linux is at handling digital media files, whether they be audio or video, over the past few issues. But when you create your own video or sound files and want to share them with friends and family members, how do you choose which format to use?

This month, we're looking at an application which shows just how powerful and truly versatile Linux is. We touched briefly on eMoviX last month, and now we're going to show you just how nifty it is...

We discussed MoviX and its siblings in short in Part Four, as part of the Masterclass on working with digital video files in Linux. This month we'll be looking at the application in more detail, and demonstrating just how amazing this particular variant of Linux is. If you want to impress a Windows-using friend who sneers at that "operating system for people who can't afford Windows" (a direct quote from a friend of this writer, no less), then read on.

One of the great things about PCs is the ease with which they handle digital video files. Modern camcorders are equipped with fast FireWire interfaces, making it not only possible but also easy to stream your home movies directly to your PC's hard drive. You can edit and tweak them to your satisfaction, then either send them back to an input-enabled camcorder or save them to disc.

1 Sharing video So you've got your video, but what if you want to show a video file to a friend or family member? If they have a DVD player, you can always opt to create your

own DVD-Video disc and be done with it, but not all of us have the wherewithal to create DVDs. The obvious answer is to use one of the PC's many compressed video formats, burn the resulting footage to a CD and let other people watch it on their own PCs – and this is where the problems start. What if they don't have a media player capable of dealing with your chosen format? What if they have an outdated codec, or don't have the right codec installed and don't want to add it? What if you're dealing with a school or work machine where user installation of software is prohibited?

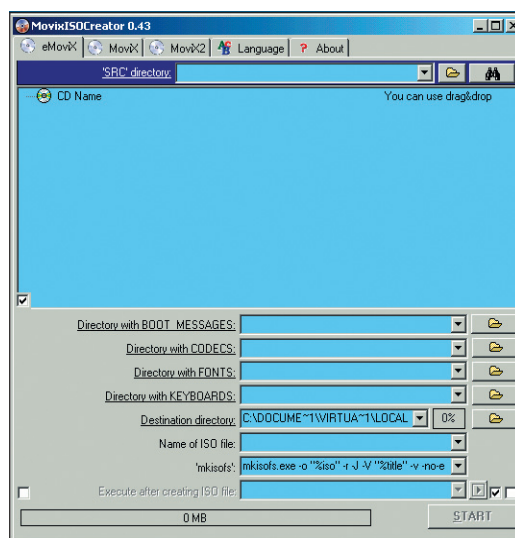
This is where MoviX comes in. As we mentioned last month, MoviX is actually a standalone dedicated Linux distribution designed with one purpose in mind – playing digital media files quickly, easily and with the minimum of fuss. MoviX comes in three flavours, each of which is designed to do a slightly different job and is aimed at different users. For the purposes of this Masterclass we'll be looking at eMoviX.

eMoviX is designed to be the ultimate no-brainer solution for playing back digital video and audio files on almost any PC. The idea is so simple and elegant that it's startling. MoviX creator Roberto De Leo came up with the idea when he was trying to set up his father's laptop to play some videos he wanted to show him. The laptop wasn't powerful enough to play the video back efficiently under Windows, and Roberto knew that the Linux player MPlayer would manage without a problem. Since he couldn't install Linux on his dad's machine, he created MoviX.

2 The joy of eMoviX Here's why eMoviX is so good – it's completely self-contained. You create a bootable CD, which contains eMoviX alongside the video and audio files you want to play, burn it and you're done. Your recipient inserts the CD and switches the PC on – eMoviX loads the modified Linux kernel, runs MPlayer and plays the files automatically. No installation or configuration is needed, since the eMoviX distro is set to run from the live CD, so you really can send an eMoviX CD to anyone with a Pentium-class PC.

To create your custom eMoviX CD you need three things: the eMoviX distro itself, a tool to help build the actual disc, and some digital media files. You can download the latest version of eMoviX from the home site at <http://movix.sourceforge.net>; this was version 0.90pre1 at the time of writing, but we've found it to be very stable indeed. There are graphical tools for creating the bootable eMoviX CD for both Linux and Windows, and you'll find links in the Going Further box on the facing page.

For the sake of simplicity, in this Masterclass we're using the Windows-based tool which comes with eMoviX called MoviXISOCreator. When you install the Windows eMoviX package, MoviXISOCreator will be automatically installed alongside it. Run the program and you'll see a distinctly unhelpful display full of blank boxes. Firstly, you need to



MoviXISOCreator is the Windows-based tool you use to create the actual ISO image containing eMoviX and your media files.



Frank Charlton

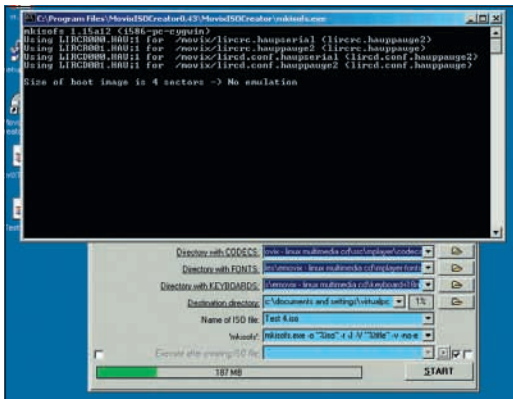
frank.charlton@futurenet.co.uk

Frank has been working with PCs since the early 1980s, and has been writing about Linux since he discovered the first versions on Atari and Amiga machines

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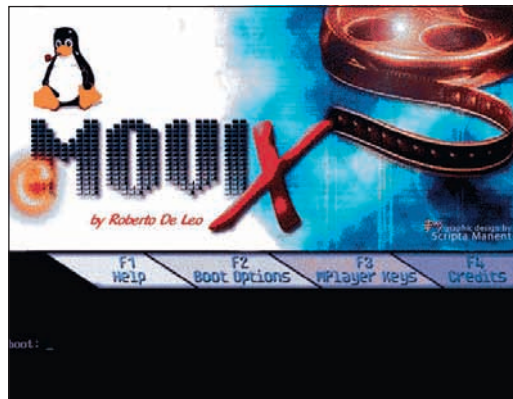
<http://forum.pcplus.co.uk>



Once your layout is complete, MovixISOCreator invokes the mkisofs command to build a disc image ready for burning.

tell the program where the eMovix files are – the location is at the top of the screen, and is labelled as SRC directory. Set this to C:\Program Files\eMovix – linux multimedia CD\src. If you expand the tree in the main window, labelled CD Name, you should see that three directories have been added: isolinux, movix and MPlayer. Next, you need to deal with the path settings at the bottom of the screen. The folders for BOOT MESSAGES, FONTS and KEYBOARDS are all within the eMovix installation directory, and are clearly labelled. The path for CODECS is different – it's inside the MPlayer directory, which lives within the SRC directory that we've already specified. Finally, set a destination directory and give your ISO file a name.

3 Adding media files Now you can add your media files; MovixISOCreator supports drag and drop, so you can simply dump them in the main window. Movix uses a subset of the MPlayer program, and can play a wide range of



When your eMovix CD boots, you'll see this display first. Use the function keys to access help screens, or just hit [Return] to begin.

formats very easily. If MPlayer can handle it, so can eMovix, meaning that you can happily include AVI files (including those which use DivX and XviD codecs, making it possible to fit an amazing amount of video onto a standard CD-R), MPEG, Windows Media Video and Apple's QuickTime format. It's worth pointing out that while Movix can deal with DVD-Video, for legal reasons none of the variants comes equipped to decrypt commercial CSS-encoded movies. You can add DeCSS support yourself, but we're not about to cover that here, for exactly the same reason.

Once your files have been added to the disc layout, you simply click START to create the ISO image on your hard drive. This doesn't take long, and you can use your favourite CD-writing application to burn the image to CD. If you don't have a burning application, eMovix comes with the command-line tool cdburn to commit the image to disc – just enable the checkbox next to Execute after creating ISO file. **PCP**

GOING FURTHER

Movix home

movix.sourceforge.net
The main home site for the Movix, Movix2 and eMovix projects, with downloads and full documentation.

Movix Forums

sourceforge.net/forum/?group_id=61561
The user forums are great for help and ideas, including details on how to use a cheap PC as a dedicated media playback server using Movix.

MovixISOCreator

www.movixisocreator.prv.pl
Home of the Windows-based tool used to construct ready-to-burn Movix CDs.

MovixMaker

savannah.nongnu.org/projects/movixmaker
A GTK+ graphical tool for Linux to do the same job as MovixISOCreator.

K3b

www.k3b.org
An excellent KDE-based burner, which also creates Movix CDs.

NEXT MONTH

Next month we'll be starting a brand-new Masterclass.

Using eMovix

Make sure your friends and relatives know how to navigate through your media files

The eMovix CD you created is designed to be not only self-contained but very easy to use, so it's ideal for sending off to less technically-minded family members. As long as they own a PC with a Pentium-class processor and can boot from CD, they can watch the video files you send using the eMovix disc.

Since eMovix utilises the wonderful MPlayer application we looked at last month, it's fairly simple to get to grips with. When you send your CD to your friends and family, you might like to let them know the keys MPlayer uses for navigation. It's worth pointing out one thing, though – MPlayer can actually display the key commands supported

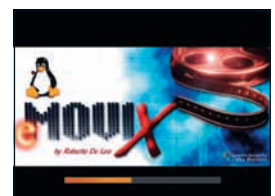
as the video is playing. Just press the M key to bring up the MPlayer navigation menu, which is overlaid onto the currently playing video track.

Navigating through the video is easy, since eMovix plays the first video track automatically. You can pause playback using either the [P] key or the space bar, and any key resumes. The right and left cursor keys skip through the currently track 10 seconds at a time, while up and down skip in one-minute increments. You can also use the [PgUp] and [PgDown] keys to seek forwards and backwards in 10-minute chunks.

You can adjust the volume of the current video or audio track using two

sets of keys – both [/] and [*] work alongside [9] and [0] for this purpose. Occasionally, you may find that video files suffer from poor synchronisation between the audio and video – this can happen both with poorly-encoded files and on older hardware, where the video codec may struggle more than the audio codec. MPlayer enables you to adjust the audio delay in increments of 0.1 seconds, using the [Z] and [X] keys – experiment to get the best results.

If you burned more than one file to your eMovix CD, pressing the [>] and [<] keys will move backwards and forwards between them. Finally, pressing [Q] or [ESC] will quit MPlayer. ■



Here eMovix is loading the kernel and modules ready to go. After a few seconds, your chosen video file(s) will start to play automatically.

This series	Part One	Part Two	Part Three	Part Four
Network and infrastructure monitoring	Bandwidth and system utilisation	Nagios and network monitoring	IP packet monitoring	Snort and deep-packet analysis

Bandwidth utilisation

PROJECT TIME



1 HR 00 MINS

SKILL LEVEL



5 INTERMEDIATE
Easy to set up but you'll need to be able to read the graphs produced

YOU'LL NEED THIS



A SNMP-capable network device and a Linux box

FILES ON SUPERDISC



Any files you need to complete this Masterclass are on this month's SuperDisc

In the first part of a new Masterclass series, **David Coulson** takes a look at how graphs can be used to monitor network traffic

Whether as part of a business process, or simply for fun, it's always a good idea to know exactly how much bandwidth we, or anyone else attached to our network, is eating up. Not only can the information be used to berate that person who gobbles up all of the available bandwidth downloading nonsense, it makes for a very useful debugging tool, giving information on the flow of traffic at specific times of the day, and on what is actually passing between specific nodes on the network.

We're going to look at a few different tools that can be used to monitor traffic and other useful information on network attached devices.

1 An introduction to MRTG The most common program for doing network graphs is the ever-popular MRTG (<http://people.ee.ethz.ch/~oetiker/webtools/mrtg/>), which functions purely via SNMP. MRTG enables us to graph our bandwidth usage on any network interface attached to a local or remote system, although venturing beyond the most basic configuration requires a little understanding of how SNMP works, with more than a few hoops to jump through before MRTG will do what you want it to.

2 The MRTG binaries MRTG has three important binaries which are distributed as part of the main package. The first is 'mrtg', which is what actually generates all of the pretty graphs for us via a cronjob. Next is 'indexmaker', which generates HTML from our MRTG configuration, giving us a nice little page on which we can easily look at our MRTG graphs without having to look at a directory listing and figure out which IP belongs to which host.

Finally there's 'cfgmaker', which generates our MRTG configuration based upon a number of options we pass via

the command line. Essentially, we can point this at a host, tell it how to index the interfaces, and off it goes, spitting out the configuration we need to generate graphs for that host using 'mrtg'. If we want to graph multiple hosts, we can run 'cfgmaker' many times, and bundle all of the configuration files together. This way, we can avoid having to run 'mrtg' via cron for each individual configuration, having it run just once, and then work through multiple hosts within a single configuration file.

3 Configuring 'cfgmaker' 'cfgmaker' is very easy to use, although there are masses of configuration options that we can pass to it. The most important option is to ensure that MRTG indexes our graphs based upon the interface name, rather than the SNMP ID of the interface. The ID is based upon when the kernel sees it, meaning that interfaces which are added or removed, can disrupt the entire graphing process for everything else. Changing kernels, or rebooting, can often yield the same result, so avoiding the ID as much as possible helps to keep the graphs consistent. Using 'descr' as the index means it will use the name of the interface, such as eth0, eth1 and so forth. For other devices, such as simple switches, it's usually safe to use the ID, as the switch port is never going to move.

4 'cfgmaker' in action When we run 'cfgmaker' against a host, we end up with output which looks something similar to the following:

```
# Created by
# /usr/bin/cfgmaker --ifref=descr --
ifdesc=descr 10.1.1.1
### Global Config Options
for Debian
WorkDir: /home/david/personal_web/mrtg.
openconsultancy.com/htdocs/
# or for NT
# WorkDir: c:\mrtgdata
### Global Defaults
# to get bits instead of bytes and graphs
growing to the right
Options[_]: growright
### Interface 2 >> Descr: 'eth0' | Name: '' |
Ip: '207.166.193.157' | Eth: 'fe-fd-0a-01-00-
02' ###
Target[10.1.1.1_eth0]: \eth0:public@10.1.1.1:
SetEnv[10.1.1.1_eth0]: MRTG_INT
IP="207.166.193.157" MRTG_INT_DESCR="eth0"
MaxBytes[10.1.1.1_eth0]: 1250000
Title[10.1.1.1_eth0]: eth0 -- gw-fw
PageTop[10.1.1.1_eth0]: <H1>eth0 -- gw-fw</H1>
### Interface 3 >> Descr: 'eth1' | Name: '' |
Ip: '10.1.1.1' | Eth: 'fe-fd-0a-01-01-01' ###
```



MRTG is the most popular graphing tool for networks, not to mention it's very easy to get up and running.



David Coulson

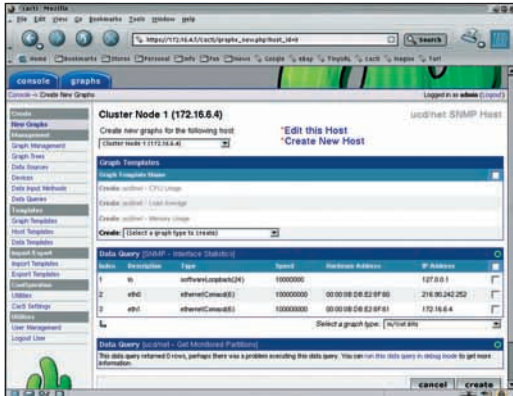
david.coulson@futurenet.co.uk

David Coulson is a Linux consultant specialising in network architecture and system management

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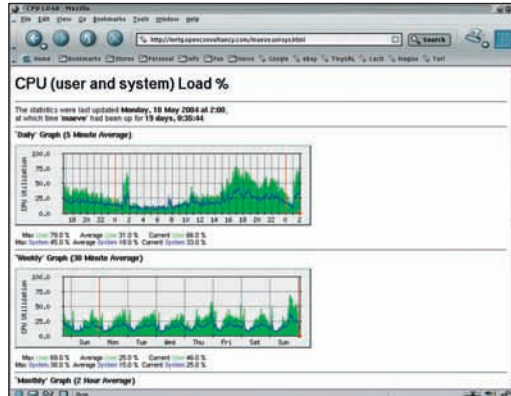


Cacti has an extremely simple configuration front-end that requires next to no knowledge of SNMP.

```
Target[10.1.1.1_eth1]: \eth1:public@10.1.1.1:
SetEnv[10.1.1.1_eth1]: MRTG_INT_IP="10.1.1.1"
MRTG_INT_DESCR="eth1"
MaxBytes[10.1.1.1_eth1]: 1250000
Title[10.1.1.1_eth1]: eth1 -- gw-fw
PageTop[10.1.1.1_eth1]: <H1>eth1 -- gw-fw</H1>
```

'cfgmaker' will spit all of the information out to stdout, so doing a redirection to a file is the simplest way to keep all the output together. Of course, before we run 'mrtg', we can look through the output, and remove any interfaces that we're not concerned with about, such as loopbacks or virtual interfaces that are not used, as well as modifying any of the data which was sent over to MRTG via SNMP when cfgmaker was run.

We can now run 'indexmaker' against this configuration, which generates a nice index page containing all of our graphs. At this point, we can start to use 'mrtg', although



Graphing CPU load with MRTG is fairly simple, although it doesn't distinguish the type of load on your system.

running it from the command line is the best way to notice any errors it spits out, or watch for any interfaces we don't want to have graphed.

Creating a cronjob Once we're sure that 'mrtg' is running as we need it to, we can set up a cronjob which executes mrtg every five minutes and gathers data from our remote systems:

```
MAILTO=david
SHELL=/bin/bash
PATH=/usr/local/bin:/usr/games:/usr/bin:/bin:/home/david/bin
*/5 * * * * mrtg /home/david/personal_web/mrtg.
openconsultancy.com/mrtg.cfg > /dev/null 2>&1
```

There's no need for 'mrtg' to run as root, assuming the process can write to the directory containing our graph and datafiles.

PASSING SHOT

Cacti supports the ability for an administrator to create their own customised data sources and graphs. This allows us to start to graph more interesting things, such as the number of messages entering a mail server, DNS lookup types and a whole host of other things.

It's particularly easy to write Perl scripts that feed information over to the Cacti system, or integrate them with the SNMP server running on the local system to make it easily network accessible. Of course, it does take a little imagination and practice to get the graphs looking like something meaningful, but it's not impossible.

Life after MRTG

MRTG is good, but there are tools which are better

MRTG can be useful if we want to monitor a couple of boxes, or a switch, or watch the traffic entering and leaving a network. But for large infrastructures containing hundreds of devices, each with anything up to a hundred interfaces, MRTG simply is not practical.

Cacti is a very user-friendly alternative to MRTG, which offers all of the essential capabilities MRTG has for SNMP-based device monitoring. However, it wraps it all up in an easy-to-use user interface, along with a complete web-based administrative front-end, making cfgmaker look like something out of the 1980s. Within Cacti, each host is defined through the

web interface, with individual graphs added to it. Depending upon the classification of the device, certain graphs are made available if the SNMP service on the device supports that particular type of hardware. If we tell Cacti that we want to graph a Linux box via Net-SNMP, we can look at disk usage, memory utilisation, network interfaces, and so on. For Cisco devices, we can look at CPU load, along with all of the interfaces available.

Each interface in Cacti can have multiple graphs associated with it, so we can create graphs watching bits per second, packets per second, 95th percentile, errors on an interface, unicast

and/or non-unicast packets, as well as a host of other options. All this is done through the web interface, so no messy configuration files have to be changed using vim and anyone who's giving privileges to access the administrative front-end can maintain Cacti.

Within Cacti, each user can have a separate login and preferences, making it very easy to allow a customer or user to access graphs for their systems, without letting them at the admin portion of the tool, or letting them look at graphs for the entire infrastructure. Each user can also have their own configuration, allowing them to organise the graphs in many different ways. ■



Cacti allows us to group graphs together, so we can permit users access to only a specific subset of our servers.

Cacti graphing

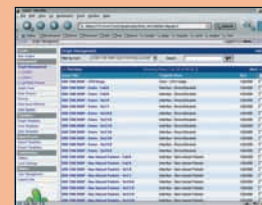
Now we know what Cacti is, how do we make graphs with it?

Once Cacti is installed, we can login as the 'admin' user and start to create the device graphs we want. The first step is to head over to the 'Devices' option and start to add devices we want to graph. Each device may have different SNMP options depending upon how they were initially configured, so ensuring we have up-to-date community or authentication information is key. For many devices,

SNMP may only work if defined for a specific host, rather than being wide open to the entire world.

Once the device has been added, Cacti will give us the option to create graphs for the host. As it polls for network interfaces when we create the host, a whole list of interfaces is available for us to pick from. At the very bottom is a drop-down list of the

various interface graphs we can make using Cacti. We can create multiple graphs for a specific interface using a different option, although some of the graphing types have duplicated information within them. For example, there's no point in graphing both 'bits per second' and 'bits per second with 95th percentile', as everything included in the first is available in the second. ■



Cacti can graph multiple elements of an interface, showing a lot more information than MRTG can provide.

GOING FURTHER

As well as monitoring overall bandwidth, there are many other metrics associated with interfaces that can prove very useful to anyone maintaining a network. The most basic of these is packets per second, as this gives us a very good overview of how heavily the network is being used. It can also indicate that a DoS attack is taking place, which may appear as a large number of small packets entering the network, which would not normally appear on a bytes per second graph.

In terms of general network performance, monitoring errors on an interface, or even the number of broadcast or multicast packets, can give an indication of a configuration problem. With a large number of errors on an Ethernet interface, a performance problem can be tracked down to either a software configuration problem, such as a duplex mismatch, or a bad cable or port.

NEXT MONTH

Next month we'll be looking at monitoring our network for failures using Nagios.

6 Graphing CPU usage We can also graph CPU usage on a system using MRTG, using a configuration similar to the following:

```
LoadMIBs: /usr/share/snmp/mibs/UCD-SNMP-MIB.txt
Target[maeve.usrsys]: ssCpuRawUser.0&ssCpuRawSys
tem.0:public@10.1.1.7
RouterUptime[maeve.usrsys]: public@10.1.1.7
MaxBytes[maeve.usrsys]: 100
Title[maeve.usrsys]: CPU LOAD
PageTop[maeve.usrsys]: <H1>CPU (user and
system) Load %</H1>
Unscaled[maeve.usrsys]: ymwd
ShortLegend[maeve.usrsys]: %
YLegend[maeve.usrsys]: CPU Utilization
Legend1[maeve.usrsys]: User CPU in % (Load)
Legend2[maeve.usrsys]: System CPU in % (Load)
Legend3[maeve.usrsys]:
Legend4[maeve.usrsys]:
LegendI[maeve.usrsys]: User
LegendO[maeve.usrsys]: System
Options[maeve.usrsys]: growright,nopercent
```

After adding each new graph, we need to run 'indexmaker' again to build the new index page, and 'mrtg' will pick up the new graph automatically the next time it is run. For many graphs, 'mrtg' will not generate anything useful until it has been run twice, as it requires the difference between two values across a time period, rather than the absolute value at an instant. As such, when we add a new bandwidth graph, it will be up to ten minutes before it looks exciting, rather than five.

7 Graphing resources For those of us wanting to create graphs of various devices, there's a great resource at www.somix.com/support/mrtg_repository.php which contains the specific MRTG configuration required to graph a specific



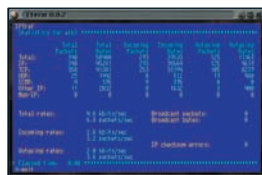
A router within an enterprise can have a large number of interfaces, and having the capability to monitor all of them is vitally important.

piece of hardware. Everything from Nortel through to Cisco is included, with new devices being added all the time. There are many other resources available, through the medium of Google, which include all of the MIBs available for particular brands of technology, making for some impressive customised graphs.

8 Linux resources For Linux systems, the most popular SNMP service is net-snmpd, which can be downloaded from www.net-snmp.org, or should be available as a package from your distribution's FTP server. This service enables you to graph network devices, CPU usage and load averages, memory and disk usage, as well as offering many other useful features. Anyone who is using Quagga or Zebra as a routing protocol can also graph OSPF and BGP information through Net-SNMP, which can be particularly useful for monitoring the health of a large network with various paths between locations. **PCP**

Real-time network information

MRTG and Cacti are useful, but what if we want to know what's happening, right now?



iptraf displays a great deal of useful device information, including bytes per second and specific protocols.

There are a number of different tools for Linux which can be used to monitor a network device on a host, or to watch the traffic passing across an interface. Rather than functioning via SNMP, these run locally on the host in question, or by running them passively on a network.

The most well-known network tool is 'tcpdump', which simply sits there and saves out each packet that enters or leaves an interface. You can set tcpdump to only watch specific types of packets, or those heading to or from a specific IP or port, but it gives us little indication of the actual flow of traffic beyond 'not much' and 'quite a lot'. As such tcpdump is best used as a diagnostic tool for

specific traffic, rather than looking at the interface from a performance viewpoint.

For monitoring an interface, 'iptraf' is particularly effective. It shows the overall amount of traffic over an interface, both in bits and packets per second. We can also look at specific traffic for a protocol, such as TCP, UDP or ICMP. In the event that we're flooded with UDP or ICMP traffic, iptraf will show the specific flow of packets across an interface. We can also look at connections between two hosts and the amount of traffic which has gone between them within that specific connection. This is always useful when people are downloading large files from FTP or HTTP servers and

hogging bandwidth, as we can easily see if someone is running multiple connections in and killing the network, rather than doing one at a time.

For deep-packet analysis, the wonderful 'Ethereal' tool allows packets to be dissected and the inner protocol to be investigated, right down to specific data segments and command sequences. Ethereal can deal with the vast majority of TCP and UDP protocols, including routing protocols such as BGP and OSPF. You can pick out the request from a HTTP connection, or the 'RCPT TO' command from a SMTP transaction, making for some very useful debugging processes. ■

This series	Part one	Part two
Personal Finance with Money 2004	Setting up new company files and online banking, creating accounts and using categories	Day-to-day with Money 2004, investment planning and reducing your debts

Day-to-day with Money 2004

PROJECT TIME



0 HRS 30 MINS

SKILL LEVEL



3 BEGINNER
No previous accounting experience is necessary

YOU'LL NEED THIS



Money 2004

You can tell just where your cash is going at a glance by keeping Money 2004 updated on a daily basis, as **Tim Woodward** explains

With a few accounts and categories set up and your regular bills and payments on file ready to go (see Personal Finance with Money 2004 Part One), we're ready to provide Money 2004 with the raw data it needs to really get to work. In this tutorial we will see how easy it is to enter day-to-day transactions into the software, and look at how you can get started with Money 2004's investment and planning aids.

There's a saying that goes along the lines of 'you only get out what you put in', and in computer terms you can read this as Garbage In, Garbage Out. When it comes to accounting, this GIGO concept is extremely important, because if you just throw a load of data into Money 2004 without telling the software a little about it, then Money unfortunately won't be able to tell you where your cash went. More importantly, you won't be able to see how well you're doing or perhaps even why you aren't doing well at all. Thankfully, Money makes it easy to analyse your information using categories and classifications (see Part One for more on this) and, once you get the hang of what goes where, entering data will become a doddle.

1 Data entry using the Accounts Register Armed with your chequebook, and perhaps any bills or receipts for expenditure you've made, go to Accounts List on the Accounts and Bills menu and click the name of the bank account in which you want to edit data. You should see a screen called the Accounts Register, which looks something like your bank statement, showing all your transactions to date, along with

an account balance and a list of scheduled bills and deposits. At the base of the page should also be a form for entering new transactions or editing existing ones – if it's not there, click Show Transaction Forms at the top-right of the screen.

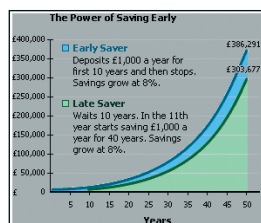
To start a new entry either click the first blank line at the end of the list of transactions or press the 'New' button on the form itself. Take your receipt, or a chequebook stub from which you want to enter data and fill in the fields of the form one at a time, pressing tab after each one so you don't skip an important field with a mouse click in the wrong place. The cheque Number, Pay To, Date and Amount fields are pretty obvious, but the most important entries are Category and Split.

2 Doing the splits and saving time If you were posting a payment for groceries, then you would typically use a category like Food, with a sub category like Groceries (these should be part of the standard categories already set up in Money 2004). If part of that particular cheque was used to pay for petrol, because you filled up at the supermarket, you can use the Splits button to split the total amount over several different categories. Simply add another category line for, in the case, Car Petrol/Diesel under the existing entry, and adjust the amounts appropriately.

You might have noticed the Common Withdrawals button while processing your payment. This is an excellent way to save time when posting entries you often come across. Just drop down the list and you can pick from the most often-used bills, credit card payments and cheque purchases. You might also notice that as you type, Money enters the rest of the description for you, and you can save

Looking ahead

Long-term planning, such as saving for retirement, is another area where Money 2004 can help



Using the Lifetime Planner, you can effectively create and manage a complete picture of your financial wellbeing from the present until retirement and beyond.

Nowhere do you get more out of Money 2004, based on how much information you put in, than when using the Lifetime Planner. Here you can effectively tell the software about every aspect of your financial situation; Money will return the favour by keeping you on course to achieve your goals in the timespan specified. As you alter information during the day-to-day running of your accounts, so Money will update your plan, and inform you of the possible outcome.

To make a start go to Lifetime Planner on the Planner menu, and input as much data as you can about yourself, and your partner if applicable. You can

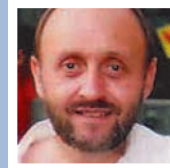
create a profile of your income and career situation, and calculate an effective tax rate and inflation figure to determine the effect of those factors on your salary. Next you can include saving and investment accounts already on the system, and add savings contributions, life insurance and pension provision details as well. You can input an expected rate of return for your savings and investments both before and after retirement, while detailing the extent of your existing assets. Usually your home will be your biggest asset, but Money understands that this is often offset by a mortgage loan with a specific life, so this can be taken into account.

Finally, your other loans and debts (using data from the Debt Reduction Planner if you've used this tool) and your typical living expenses can be entered and plotted, to see the effects of inflation; the results are displayed in various graphs and charts that help you to see exactly what you can expect over the course of your lifetime plan. You can then take advantage of Money's personalised advice based on your own particular situation and look at forecasts for specific questions, such as 'Will I have enough money for retirement' or 'Can I save more than planned'. It's all very clever, even if the results might make sobering reading! ■

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Tim Woodward

tim.woodward@futurenet.co.uk

Tim is an expert on financial software, and has been testing and reviewing e-commerce solutions for over five years

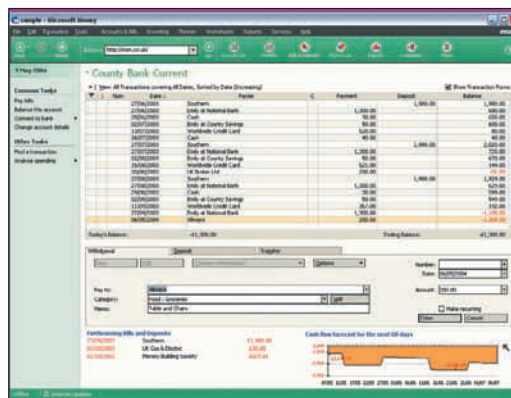
time by making the entry a recurring one if you expect this to be a standing order every month.

The same procedure applies to making deposits or posting transfers between accounts; just choose the appropriate tab on the form before starting your entry and fill in the fields one by one. As you can see in the screenshot the accounts register is simple to use, and a handy place to see everything that happens in your bank account. You can sort the entries in any order, limit the display by date or choose reconciled or un-reconciled transactions only.

3 Investing in the future Money 2004 doesn't just take care of your day-to-day expenditure tracking. A large part of the program is devoted to investment planning and management. This is, by its very nature, a complex subject, but if you have investment plans, shares or trusts, an overview of the way Money deals with things should be enough to get you started.

Money 2004 features three elements to help you track your funds: Accounts, Portfolios and Investments. Creating an Investment Account is the first step in the process, after which you can add individual investments to this account, and the various accounts will then be gathered together under an overall portfolio.

Creating an investment account is a simple matter of running a wizard, just like those for creating bank and credit card accounts. To find the wizard look under Portfolio on the Investment menu, click Accounts on the navigation bar and Set up Accounts in the left pane. Use the Add a New Investment Account link to fire-up the wizard, and answer all the questions one at a time. Once done, you will get an opportunity to add specific investments to this account, and you will need your latest statement from the financial institution concerned here for the cash balances involved. To check how your investments are doing, you can see an overview of your portfolio based on share valuation or prices,



The Money 2004 Account Register makes light work of entering data into your accounts. Just assign everything to a category, so the program can show you just how much went where.

plus a performance view that showing the market gain and appreciation. If you have enough data you will also see a graph of the investment value, along with an indication of your best performers, and the percentage increase (hopefully!) in value since the last time you checked.

If you haven't actually bought any shares or investments, but you would like to see what might have happened had you had the nerve, you can use Money 2004 to 'watch' on-line performance for you. Choose Add an Investment from the left pane of the Portfolio view, select Investments to Watch and tell the wizard which shares or index you're interested in. You could, for example, track an index to compare the performance of an investment within its industry, peer group, or the market. You can even keep track of your imaginary shares against the FTSE, Dow Jones, NASDAQ, or industry indices such as Chemicals and Healthcare. **PCP**

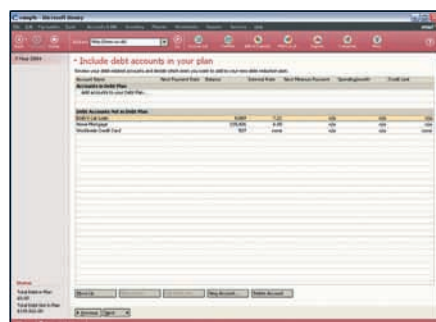
GOING FURTHER

For beginners wanting a good bedtime read, try *Easy Microsoft Money 2004* by Gina Carrillo from Que. If you fancy delving a bit deeper then try *Microsoft Money 2004 for Dummies* by Peter Weverka, from John Wiley & Sons, which seems to be pretty much the definitive text on the subject. There's also a new area of MSN dedicated to Money and what you can do with it – either click the link on the Money 2004 home page or follow <http://money.msn.co.uk/MyMoney/MicrosoftMoney/introduction/welcome/default.asp>.

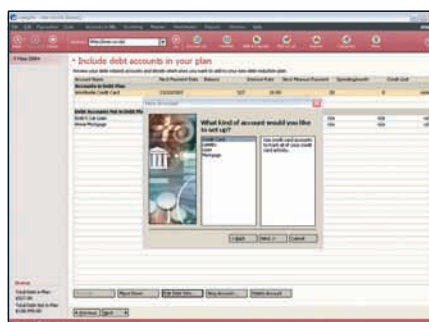
NEXT MONTH

Next month we'll be beginning a new Masterclass series.

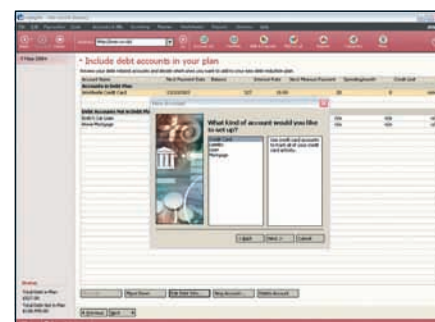
Setting up a debt reduction plan



1 With interest rates so low and lenders so willing to encourage more and more borrowing, you would be in a minority if you didn't have at least one loan or credit card you would like to manage more effectively. Money's Debt Reduction Planner can help you do just that. To begin the process select Debt Reduction Planner from the Planner menu.



2 Click the New Account button and let the wizard guide you through each question in turn. You will need to choose what type of account this is, such as credit card, loan or mortgage, then enter how much you owe and the interest rate being used to calculate your debt. Money 2004 can now keep track of the loan, and help you manage payments.



3 Once the wizard is done you can click the Next button and define the payment structure for your plan. Money can then calculate all your loans, and show you how you can be out of debt in the best possible time and in the most efficient manner – saving yourself interest and making sure that you keep repayments to affordable amounts.

This series	Part One	Part One	Part One
Introduction to MySQL	Installation and basic configuration	Tables, queries and data	Making real-world use of MySQL

Getting started with MySQL

PROJECT TIME



1 HR 30 MINS

SKILL LEVEL



2 BEGINNER

Some familiarity with database use will be helpful

YOU'LL NEED THIS



MySQL and the Control Panel, downloaded from www.mysql.com

Databases are at the heart of most important software packages. **Richard Cobbett** looks at the best known of the open source world

There's a difference between a database and a database package. Microsoft Access, to take the most common example, gives you a simple, easy-to-use application capable of storing your information, recalling key bits of data whenever you need it, and leading you by the hand through Wizards, tutorials and user-friendly dialog windows as you learn how to do it. MySQL is a rather different proposition. Put simply, it's just the database. It holds your information ready for other programs to hook into, and build their own individual services over the top – for instance, the forum software that we look at on the preceding pages.

As a result, getting started with MySQL can be a trying process. You're expected to know what you're doing from the off, and there's little hand-holding if you encounter difficulties. We're going to start from the very beginning, installing and configuring all the software that you'll need to manipulate your database, before hooking it up to some basic applications and taking control of its data management abilities.

1 The OS has it MySQL is available for both Windows and Linux. We'll be using the former for this series, although most of the software we'll be looking at is available on both platforms. You can find the download at www.mysql.com/download. It's both free and open-source, although commercial versions are available elsewhere on the site. Download and unzip into a new directory, then run setup.

Once this has completed, navigate into the main directory – C:\mysql\bin is the default. You'll see several programs. Of these, the most important are mysql.exe, which opens up a terminal to interact directly with your database, and winmysqladmin.exe for taking a graphical look at it.

By default, MySQL contains two databases. Mysql contains its own settings, such as users, while test is a blank slate that you can experiment with. Assuming that

everything was properly installed, you'll be able to browse through the contents of both.

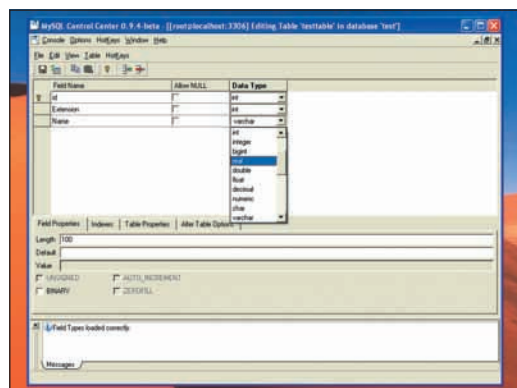
2 First edits However, winmysqladmin suffers from a couple of problems – it's old, and frankly not very good. Now that you've checked everything's working, return to the homepage and download the Control Center from <http://dev.mysql.com/downloads/mysqlcc.html>. This has its own installer, and will automatically hook into your MySQL databases. Unlike Winmysqladmin, Control Center benefits from a far greater focus on actually doing things with your database, rather than just looking at it.

Let's begin with the obvious – adding a table into the Test database. To do this, right-click on it and select 'Connect'. A tables menu will appear next to it, and you can right-click on this to begin specifying what data we want to hold. Note that we're not actually putting that data in at the moment, simply specifying the fields that we'll need to fill in.

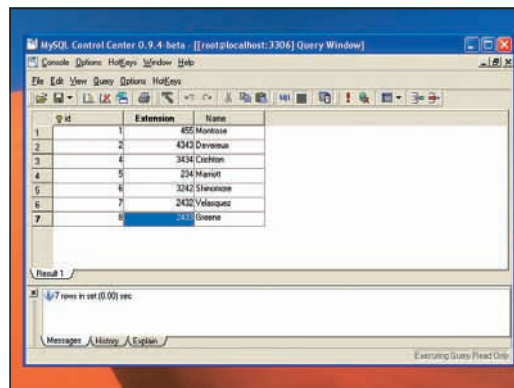
Each table needs a unique identifier, known as the 'Primary Key'. You can have multiple people called Brian, you can say that anyone you like has brown eyes, but you can only have one Entry #1 in the list. This doesn't have to be a straight number, but that's the most common way to begin.

Start by selecting the top-most field. Choose the first box and call it 'id'. On the right-hand side, choose integer as its type. At the bottom of the screen, you'll see the option to automatically increment this field, ensuring that each record has a unique number to identify it. Right-click on it and select Add Primary Key. The next field is dedicated to a particular piece of data. The default type is varchar – to make things easy – a variable length string. Click on this to see the many other available types, including date, time, binary, doubles, floats, decimals, blobs and bits. We'll call this one 'name'. Save the table as USERINFO and return to the main screen.

Time to add some data. Double-click on USERINFO to open up the relevant screen, right-click and choose Insert



Create fields inside MySQL Control Center, and fill them in from the separate interface.



Break your tables up into only the essential fields. This gives you far more manageable databases.

PCPlus Back Issues

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<http://forum.pcplus.co.uk>



Richard Cobbett

richard.cobbett@futurenet.co.uk

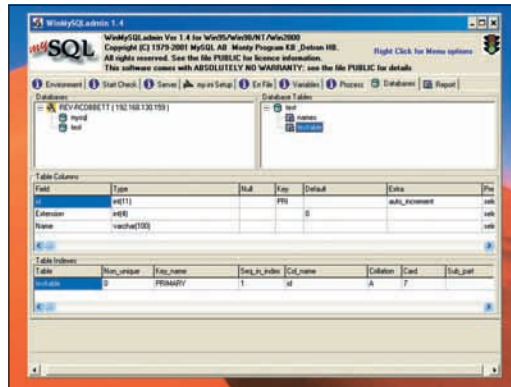
Richard is currently in talks to create the movie version of this series. Part II looks set to be the SQL with no equal

Record. As we instructed, each new record will be added with an auto-incrementing ID, leaving us with just the name to fill in. Add a handful of names to populate the database.

We can easily go back and modify the table, perhaps adding a whole new field, without having to start all over again. Let's add a space for a telephone extension. While we can use any number to represent this, we can be rather more specific about what we're asking for. If we know that the extension is going to be four digits long, we can set it to be the maximum length, and thus help reduce the risk of invalid data. Simply enter '4' in the length box, save the changes and return to the data input screen. Give each person a suitable phone number.

3 Many to one Individual tables can be useful for holding data, but are only a small part of creating a functional database. However, this information can only really come into its own when multiple tables are connected together into a proper relational database. We'll be looking at this in more detail next month, but the upshot is that all connections are split into three types – 1:1, 1:n and n:m. In a 1:1 relationship, one single data record connects up to a single second, such as a first name and surname. In practice these are rarely used, because such information could easily go in one table. Their real use comes when the tables need to be split for security reasons – publicly-accessible name and job titles in one table, linking up to wages, NI numbers and other confidential information.

1:n – one to many – is far more common in day-to-day use. Keeping with our example, we could have a separate table holding departments in a company. Any or all of them can be in Accounting, Computer Services or the Typing Pool, but we can't split Accounting into the same number of pieces. The final kind is n:m – many-to-many – such as assigning single or multiple authors to books. In each case, the tables are connected up using two keys – the Primary



You won't want to use (deep breath) WinMySQLadmin for much, but it can be useful to check that your installation went to plan.

we created earlier, and a Foreign key that links them together.

When developing a database, it's important to make use of the three normal forms. These are guidelines that you follow to create an efficient, functional database without any added cruft. The first normal form starts with our Primary Key – each data record must be identifiable. Next, a table has to be created for each group of data, and columns containing similar content have to be eliminated.

Second normal form is to split any repeated columns into separate sub tables and link them up via foreign keys. Finally, third normal form is nice and simple – anything not directly related to the primary key has to be peeled off into its own table. While following these rules isn't essential to create a basic database, they are worth keeping in mind as their complexity inevitably increases. We'll be looking at a practical example next month, along with the other crucial aspect of database management – how to go about searching and retrieving the information that we've stored in there. **PCP**

GOING FURTHER

If you have an account with a dedicated web host, you should already have access to at least one MySQL database. Install the program phpMyAdmin and you'll be able to control it on the remote server. Alternatively, your host may provide another package to help you do this. One of the smoothest we've seen of late has been on web host Hosting Unlimited (www.hosting-unlimited.net), which gives you full access to your settings (from permissions to users) from a single web panel.

NEXT MONTH

We begin using MySQL for proper data storage, holding and retrieving information as necessary.

Open source database access

Behind the scenes of the political MySQL situation

First and foremost, MySQL is free. To use the standard expression, that's free as in speech, as well as free as in beer. You can download it, use it, rip apart the source code and reuse it as much as you want, provided that the result is likewise released under the GPL. This is a distribution licence, and basically says that you have to make the source available, with no strings attached beyond any future work based on it also going out under the GPL. In recent years, MySQL has eased this restriction, also giving its okay to a number of other open source licences, including BSD, Apache, Mozilla and the Lesser GPL. A full list can be found at www.mysql.com/products/licensing/foss-exception.html.

[mysql.com/products/licensing/foss-exception.html](http://www.mysql.com/products/licensing/foss-exception.html).

If you want to use MySQL in a closed, or otherwise-restricted source application, you will have to pay out for a commercial license. The main part of the collection is the MySQL Database Server, prices starting at £147, with MySQL Pro coming in at £999 and the heavy duty MaxDB at £834. Details are available at <http://order.mysql.com>. In addition to these, there's the option to purchase a dedicated support contract, with prices starting at £9,992 and scaling up to £31,974 for premium-advanced customers. Admittedly, you probably won't need this just yet!

There is one other option though – if you can swing it past your boss – and that's mixing technical support with a trip on a cruise liner. This October sees the MySQL Swell, in which the MySQL team and guests will be sailing around the Mediterranean, discussing such topics such as the MySQL source and tuning your databases, pausing only for a quick trip to some Turkish baths, some scuba diving and historical sightseeing opportunities. To sign up, head to www.geekcruises.com. Rates start at £615 for an inside cabin, scaling up to £1,511 for a full suite. Please, if you take photos, feel free to keep them closed source... ■



Looking to get away from it all? Don't tell the boss, whatever you do...

This series	Part One	Part One	Part One
Building an online community	Creating your own forum	Mailing lists and more	Putting together the whole package

Building online communities

PROJECT TIME



1 HR 30 MINS

SKILL LEVEL



4 INTERMEDIATE
Just follow the instructions here

YOU'LL NEED THIS



A web-hosting service with CGI, Perl and MySQL support

FILES ON SUPERDISC



Any files you need to complete this Masterclass are on this month's SuperDisc

A funny thing happened on the way to the forum. **Richard Cobbett** kicks off a new Masterclass by getting ready to upload Pompeii

A community spirit is at the heart of many major websites. Articles, downloads and other directly-provided content gives you a great way of attracting people into your lair, but making them stay – or even return week on week – is a difficult art. It may not be practical to keep up a steady churn of new material, whether it's the latest updates on Automatic Backup Management 1.2 or simply a daily comic strip. Building communities around your work helps to give people a reason to check back and keep shopping, from the most basic services such as forums and commenting systems up to live customer feedback, or Amazon's inspired recommendation system – you bought this, so we think that you would like this too.

There are many different ways of going about this without having to go into such levels of complexity. As ever, most resources are freely available on the web, from mailing lists to forum software, although there's no shortage of commercial packages out there. We'll be sticking with the freebies for the course of this series.

Each method of creating a community will have its own system requirements, from self-hosting forums, mailing lists and whatever else, down to third party servers. If you plan to handle the honours yourself, then you will need a full hosting platform with CGI support, Perl and a MySQL database. Luckily, while we cover the latter in some complexity elsewhere this issue, your host will be the one setting it up on this occasion. All you need to provide is your username, password and database name for the software to access. Although the amount of data that you can store in the database will obviously be limited, you don't need one per service. You can quite happily run blogging software, customer databases, forum software, mailing lists, wikis or whatever else you need from the same database.

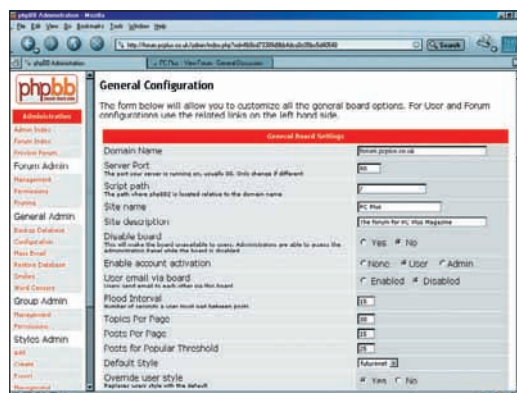
It's only worth investing in individual databases when you know that the data is going to take up a lot of valuable space. Forums, especially, have a tendency to swell up to ludicrous sizes even after receiving relatively few posts – and factoring-in private messaging, member lists, signatures and any third-party additions will quickly start making a dent in your allocation.

1 Down by the market With all this in mind, forums are the ideal way to start building your community. They offer a way to speak directly with your users, gather feedback, monitor topics of interest or simply shoot the breeze. Apart from anything else, people are much more likely to post their thoughts when they have a dedicated space to do it in – think how often you've written a letter to a webmaster to congratulate them on a particular piece of content, and you'll see that running even a moderately-successful site can be a rather thankless task.

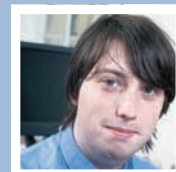
There are many types of forum. Some, like phpBB (www.phpbb.com), fit directly into content management systems such as PHPNuke, while others like Beehive (<http://beehiveforum.sourceforge.net>) have their own interface designs laid out from the word go – in this case, a frames-based look fashioned after the Delphi service (www.delphiforums.com). We'll be using phpBB for this tutorial. It's stable, well-supported, bursting with plugins, and you can try it out right now at www.opensourcecms.com.

2 Agony at the agora Installation is a snap. You have to download the files to your drive and re-upload them into the directory that you want (such as – obvious plug here – www.richardcobbett.co.uk/forum/). Next, use your FTP program to alter the permissions on config.php to 666 (all-writeable). Finally, use your web browser to run 'install.php' in the install directory, and work down the list of settings. Your host will be able to provide these. Once phpBB gives you the green light, delete both the install and contrib directories. This isn't optional – phpBB won't even run while the potential security hole is available.

You now have a working forum and sample post to work with. It's all very generic at the moment, but we can fix that. Log in using the administrator account that you created during installation. You will now see a link marked 'Go to Administrator Panel' at the bottom of the screen. Click this and you dive into the guts of your new forum. From here, you can manage your configuration options, such as specifying whether users will be able to send each other private messages, if they can use Avatars (little picture icons) to represent themselves and, if so, whether they can link to or upload their own onto your server, or should be restricted to any that you see fit to provide. This will vary according to your needs – a serious business solutions company is unlikely to want its users chatting to each other as Mickey



Behind the scenes at the PC Plus forum (<http://forum.pcplus.co.uk>). From here, we can edit topics, alter settings and deal with troublesome users (not that there are any, of course!).



Richard Cobbett
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PCPlus Back Issues
Missed an instalment?
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<http://forum.pcplus.co.uk>

Richard recently set up phpBB on his own site at www.richardcobbett.co.uk. It took about ten minutes – not including template editing, of course!

Mouse or Rei Ayanami, while personal webspace can be tight enough as it is without a forum full of Pokemon variations to deal with.

The most important screen, however, is for handling your forums and groups. You can have as many forums as you like, although it's best to stick with as few as reasonably possible (plus a General Discussion/Off Topic room for random topics) to consolidate conversations. Move Up/Move Down controls make it easy to structure the collection however you like, pushing and moving forums into the most useful positions and drawing users attention to the most important entries.

3 Conversations in monochrome The hardest part of using phpBB is customising it to fit in with the rest of your website. It's easy to make basic edits, such as altering your colour scheme, by going into the Styles Manager, choosing Edit and making a few quick changes to the default subSilver theme, and you can even download entire new theme packs made by other users. You may, however, want to start making some more direct edits, and here things start to get a little complicated.

Put very simply, phpBB uses CSS to control its fonts, colour-schemes and layout information – but not necessarily the css file that you see in your theme's directory. By default, the information is locked into the page itself, built with the file overall_header.tpl. Open this up with a text editor, delete everything from `<style type="text/css">` to `</style>` and uncomment out the link to subSilver.css. It won't look any different – subSilver.css is an exact copy of the default settings – but you will no longer be able to use the built-in editor after it. The advantage of doing this is that you can take full control of the page, adding modern style elements to text, implementing special effects such as layers and non-scrolling backgrounds, and anything else that you would be able to do on a standard HTML page.



A working forum in action. Note the ranks under each participant's name, plus touches like Javascript to randomise the quotes at the top of the screen and the static background.

Overall_header.tpl is also the page to visit when you want to edit the information at the top of the screen, including adding any banners, and customising the way that the title appears. The actual values, such as the name of the forum and its description, can still be edited from the Administration screen, under the Configuration menu.

4 Moving on further From here, you're safely in the realm of menu options and fiddling to suit. You can have anything from ranks based on how many posts each user has made to multiple themes for them to choose from, hand out moderator and administrator access to trustworthy souls, hide certain forums from view, and ban anybody who tries to make trouble. Full advice is available from the official forum at www.phpbb.com/phpbb/. Needless to say, it uses exactly the same technology, making it a great showpiece, as well as a great source of information. **PCP**

GOING FURTHER

Be careful when pushing the boat out. Features such as birthday notifications or glowing rank icons can look impressive, but the point of a forum is to keep people coming back for more. Going overboard will only serve to slow your system down to a crawl and make it much harder for them to find what they're looking for. Simple can be beautiful, even if you don't plan to be small forever.

NEXT MONTH

We'll be looking at how to add mailing lists, and more to your site.

Hacking and splintering

You don't need to be satisfied with phpBB's default features. It's open-source, and that means...

PhpBB users around the world have put a great deal of time and effort into adding to their favourite forum software. Some of these additions have materialised in the form of essential security patches to fix bugs, others in the form of additional ways to handle phpBB's built-in data, and still others building in brand-new features. With a few quick file operations, you can jazz-up ranks using CSS commands, give your users the ability to pass virtual money around, bring up recent topics, turn the interface into a fully-fledged portal site and more. It's best to start out with a clean installation, and add these an edit at a time.

Alternatively, you could try a pre-hacked installation, such as EasyBB, with a photo album, birthday messages and country flags. Just as importantly, if you already have a forum on another system, you can download converters from phpBBhacks to move your existing posts across without having to start from scratch.

Bear in mind that these aren't plugins in the traditional sense. Each should work, but there are no guarantees. It's a good idea to decide which ones you want to use before opening your forum, removing the risk that you might bring it crashing down around your ears. At least close shop during the update

procedure. You can find the necessary control for this in the forum Administration panel's Configuration screen. While your board is Disabled, you will still be able to access the administration screen, but regular users won't be allowed in. This gives you all the time you need to make sure it's up and running before they rush to try out the hot new features on offer. It's best to exercise restraint, however, as throwing in every possible extension will quickly bloat your board. ■



Choose your hacks with care. You want to ensure that everything you add will make the forum better for your users. If something doesn't, it goes.



Robert Jaques
pcplus@iteditor.com

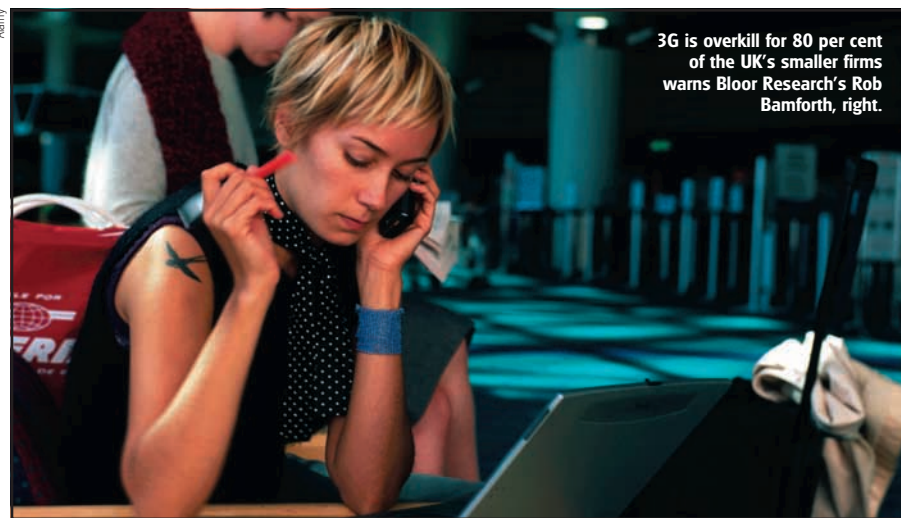
Robert Jaques has been an IT journalist for over 10 years, and has worked at the helm of a raft of prominent IT titles

business news

Edited by Robert Jaques

3G TECHNOLOGY

3G 'overkill' for 80 per cent of UK firms



3G is overkill for 80 per cent of the UK's smaller firms warns Bloor Research's Rob Bamforth, right.



in Western Europe will have signed up for 3G by the end of 2004, and subscriber numbers are expected to remain low until at least 2005.

Analysys found that the relatively slow uptake of 3G services can be attributed to three key factors: operators have experienced problems in sourcing 3G handsets; 3G networks are restricted to major built-up areas; and major operators are focusing on getting a return from their GPRS investments.

The analysis firm predicted that, with 3G subscriber numbers remaining low until at least 2005, the role to be played by GPRS has increased. It also stated that poor network coverage issues are being addressed in some cases, through the use of alternative technologies like EDGE.

A number of mobile operators, including Orange, were found to be deploying EDGE to enhance their GPRS networks, and to complement their 3G W-CDMA coverage in remote and low-traffic areas.

UK businesses should think carefully before signing up for 'overkill' 3G voice and data offerings that don't represent good value for money when compared with existing mobile services, industry experts have warned.

Rob Bamforth, practice leader for wireless and mobile technology at analyst group Bloor Research, told PC Plus that around 80 per cent of UK small and medium-sized businesses are better off sticking with traditional 2G and GPRS mobile services, because they wouldn't derive sufficient benefit from next-generation 3G services to justify the price premiums.

"When you look at 3G you have to first define the application that your mobile workforce actually needs," Bamforth said. "If you really need mobile video conferencing all the time, then you do need 3G. But for most companies the killer mobile application is still email, and GPRS provides a good enough level of service."

"There is an 80-20 rule here. For around 80 per cent of small businesses during the immediately foreseeable future, 3G is simply not going to deliver adequate return on investment to justify the expense."

According to the latest market research from Analysys Research, only five million customers

GRID COMPUTING

Grid computing gets heavyweight boost

The momentum behind grid computing has received a major boost with the announcement that heavyweight computing firms including Oracle, EMC, Fujitsu-Siemens, HP, NEC and Sun Microsystems have joined forces to create a consortium dedicated to developing the technology.

The Enterprise Grid Alliance (EGA) aims to become an independent and vendor-neutral group that brings together the many pieces of the enterprise grid computing puzzle.

EGA will initially focus on developing commercially-viable interoperable grid systems,

with a brief that covers provisioning, security and accounting.

"Although grid computing is already well-established in the academic, research and technical sectors it has yet to gain significant traction throughout the enterprise," said Donald Deutsch, president of Enterprise Grid Alliance and vice-president (standards strategy and architecture) Oracle.

"Grid computing will revolutionise the way we use technology," said Benny Souder, vice-president of Distributed Database Development, Server Technologies Division, Oracle.



Firms including Sun and Oracle have formed The Enterprise Grid Alliance to develop grid technology.

DATA MANAGEMENT

Convergence boosts demand for managed data services

Demand for complex converged voice and data services is forcing UK firms to outsource their networks to managed data communications providers.

According to the latest research from META Group, UK firms – particularly in the small and medium-sized sector – are increasingly seeking provision of complex network management services, such as consolidating interoffice telephone calls, over the corporate wide area networks.

However, Meta's research indicated that performance can be difficult to assess for customers of such services, and warned that prospective customers should choose their provider carefully.

"In the current conservative IT market, presence is an easy way to choose a vendor," said Larry Velez, Program Director at META Group and author of the report. "Most IT organisations make purchase decisions based on presence criteria, and only discover service provider performance after it's too late, when already engaged with the provider."

The analyst firm found that BT currently dominates the UK managed communication market, with an incumbent position that gives it advantages in terms of market share and geographic reach.

However, unlike incumbents in other countries, META noted that BT also provides competitive pricing, has financial strength, and is renewing its focus on improving customer relationships.



BT dominates the fast-growing UK market for managed data services, according to research.

SECURITY

Poor security auditing lets hackers off the hook

UK businesses are being warned that they need to take a good look at the way in which they log potential security breaches, as widespread failure in the auditing process is letting hackers go unpunished.

"Computer crime can't be punished – or reduced – if the perpetrators can't be brought to justice," warned Roy Hills, technical director of Internet security firm NTA Monitor.

"Unfortunately, most companies will not be able to supply the evidence which is needed to secure convictions, meaning criminals will get off scot-free."

Hill went on to warn that NTA's research showed many firms aren't maintaining their log files adequately to prove the crimes.

In many cases, Hill said, companies aren't even turning their logs on – often on the grounds that traffic gets monitored elsewhere, and it would use up too much disk space.

"Then other companies do log, but don't keep the records long enough," Hill added.

"I've seen several huge corporations where the log files are overwritten every thirty minutes. If they were attacked, there would be no record of what had happened."

Advice on how to put in place a proper auditing process can be found at www.nta-monitor.com/news/audit-advice.htm.



Hackers are getting away scot-free due to lax security auditing by UK firms.

NEWS

Top stories → In-depth analysis → Expert opinion



Illustration: Stuart Harrison

The high cost of Longhorn

Will the PC that you own today actually run Microsoft's next-gen operating system?

by Dean Evans

What if the average system requirements for Microsoft's Longhorn operating system featured: "a dual-core CPU running at 4 to 6GHz, a minimum of 2 gigs of RAM" and "up to a terabyte of storage"? Veteran MS journalist Mary Jo Foley (www.microsoft-watch.com) recently suggested as much. But while this comment highlights some interesting tech trends to watch out for – see the Intel story on page 12 – the news from Microsoft's 2004 Windows Hardware Engineering Conference (WinHEC) in Seattle was nowhere near as frightening.

With Microsoft claiming to have sunk almost \$7 billion into R&D, WinHEC is an annual chance for the corporation to show what its money is being thrown at. To some, it can seem like a four-day game of 'Microsoft says': Microsoft says what it's planning for 2004-2005 and it's up to the hardware and software

manufacturers to jump on board. This time around, for example, a popular cry was: "hear ye, hear ye... Microsoft says the PC will be the ultimate digital gateway; go now and make more Media Center systems."

Media PCs everywhere

Microsoft is focusing heavily on its media line-up – Windows Media Player 10, the Janus-equipped MSN Music service, Windows Media Center 2005 (codenamed Symphony) and Portable Media Center are all in the works. Admittedly, Media Center PCs have had very little impact so far. The market for new PCs has been sluggish and despite favourable reviews, consumers have shied away from paying £1,000+ for what has been advertised as a digital video recorder-cum-photo viewer. But the home entertainment battle is only just beginning, and Microsoft is obviously wary of the threat posed

by cheaper, more user-friendly CE products.

But Media Center is old news. At WinHEC 2004, most IT eyes were on Longhorn, although its release date has now slipped back to 2006 due to priority work on XP SP2. Microsoft showed off a new preview build of the software, much the same as the version we previewed in PC Plus 214, albeit with a fresher Jade colour scheme. Beyond the Avalon, WinFS and Indigo pillars, other details remain conceptual – Super Fetch virtual memory; GPU management; the extra NGSCB (aka Palladium) security. Microsoft did, however, confirm that the server and desktop versions of Longhorn are being developed 'in synch' and that first betas will roll out in early 2005.

While no system requirements were announced to either confirm or debunk Mary Jo Foley's earlier assumptions, Bill Gates focused on

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several key areas in his keynote speech that might lead us to a similar conclusion.

Processors: By the time Longhorn emerges in 2006, the 64-bit computing revolution will be well underway. As Gates pointed out: "between now and the end of 2005, we'll go from having very few 64-bit chips out there to virtually 100 per cent what AMD ships... and the majority of what Intel ships within two years will be 64-bit capable chips." In short: 32-bit computing is on the way out, whether we like it or not. With Longhorn delayed, Microsoft has the 64-bit Edition of Windows XP poised to fill the gap in Q4 this year.

Gates also highlighted the next big trend in processor design – multiple cores. Reducing the size of the cache to add a second processor core effectively kills two birds with one stone, delivering greater performance with lower power consumption. Intel has recently abandoned its next-generation Pentium 4 processor, Tejas, in favour of such a dual-core approach, while AMD's CEO Hector Ruiz has announced a similar two-chip Opteron solution for 2005. So a

dual-core processor in a Longhorn system is certainly likely, although with a slow-down in the rise of processor speeds, it won't run anywhere near 4GHz.

RAM: Considering that Windows XP can plunder 256MB of system memory, expecting Longhorn to grab twice this amount isn't unrealistic. Early alpha builds of the OS were little more than Windows XP but with a flashy sidebar, and won't be representative of the final product. If Longhorn does abduct 400-512MB of RAM, a machine with 2GB of memory is also spot on. We're already seeing desktop and laptop systems running with a gigabyte of RAM today.

Storage: How realistic is a terabyte of storage space? Again, it's all a matter of perspective. With users requiring increasing amounts of storage, we've already seen PC systems with 400GB of HDD space across a RAID array. Considering that this specification is almost halfway there, few industry watchers would rule out machines with over 1,000 gigabytes of storage in 2006.

So rather than an average system requirement, a dual-core PC with



In addition to the high core specifications suggested by analysts, Longhorn will also require a powerful graphics accelerator for its enhanced 3D features.

2GB of RAM and 1024GB-worth of HD space isn't an unlikely spec in 2006. As Microsoft has pointed out, lesser machines will happily run Longhorn, but they won't get the full, effects-crammed Windows experience. Instead, low-end systems will get something that analysts suggest will look like Windows 2000, albeit with integrated VoIP, pre-boot media playback and extensive 2D/3D multimedia functionality.

DIGITAL RIGHTS MANAGEMENT

Meting out music, Microsoft style

This downloaded song will self-destruct in five days

Microsoft digging itself further into the world of Digital Rights Management (DRM) should come as no surprise, but you have to wonder what it was thinking with its Janus project. This long-delayed technology is being pitched largely as an iTunes Music Store killer, but with a focus towards 'rentable' content rather than downloads. You can trust it. It won't turn on you in the interests of cartel products. Also, it's named after the two-faced Roman god, so nothing to be concerned about there at all.

Put simply, the Janus software timebombs downloads. You can pull tracks from the net, you can copy them to MP3 players or you can move them between machines – but when the clock runs out, it's time to put more quarters into the jukebox. Slightly more interesting is that the planned model appears to be based on monthly subscriptions rather than the existing song-by-song purchase arrangement. It means that you'll never actually own the music file itself, but you should be able to keep it flowing without additional outlay.

We say this, but in truth we're doubtful. There have been recent rumours about plans to increase the price of iTunes purchases, not to mention the growing realisation that it can often be cheaper to buy the music you want on a disc than download the whole album from the



Windows Media has always had an uphill battle against the more established QuickTime and MP3 formats. Janus looks set to give it a major USP.

forementioned i-store. Such talk isn't encouraging for the future of legitimate digital music.

In Janus' case, the big question is whether the entertainment industry will finally be able to move from iTunes style one-shot music purchases to the potentially much more lucrative and controllable rental market. It's a big ask. And while they dither, we wonder whether mainstream customers will finally start to realise how short the stick they've been handed really is. –Richard Cobbett

THE MONTH IN NEWS

→ Two new wireless standards will be certified by the Wi-Fi Alliance (www.wi-fi.net) this year – 802.11i will introduce a complete Wi-Fi Protected Access (WPA) security standard to replace the much flawed WEP. The 802.11e standard, meanwhile, is set to improve the quality of wireless data transmissions.

→ The 1394 Trade Association (www.1394ta.org) has quietly approved the specification for IEEE 1394 over IEEE 802.15.3 or, in friendlier terms, **Wireless FireWire**. This will enable devices such as DVD players, camcorders, PCs and TVs to interoperate via RF over short distances at 400Mbps speeds.

→ Microsoft is seeking to improve the usability of Pocket PCs with an update to its **Windows Mobile 2003** operating system. The new Second Edition (SE) software will add landscape/portrait mode switching, support VGA (640x480) pixel displays, and feature improved Internet Explorer software plus WPA security.

PROCESSORS

The death of the Pentium 4

Intel's recent decision to can both its Tejas and Jayhawk projects heralds a new era in processor design

Intel dramatically ripped up its processor roadmap this month, ditching its plans for the Pentium 4 successor, Tejas, and cancelling the proposed Xeon server chip, Jayhawk. The announcement effectively signs the death warrant for the Pentium 4 line, as Intel's new strategy involves using lower frequency cores in combination to deliver greater performance with less power consumption. It's the 'many hands make light work' principle.

Although it seems like a sudden move, it's not an entirely unexpected one. In the words of Intel's UK spokesman, Nick Knupffer, the chip-builder will now "accelerate [its] plans for dual-core desktop processors in 2005", and is working to "deliver dual-core products ranging from high-end, Itanium processor-based servers to desktop and mobile product lines." Intel is effectively saying: "relax everyone, we were always going to move to multiple-core processors, we're just moving there faster than we said we would".

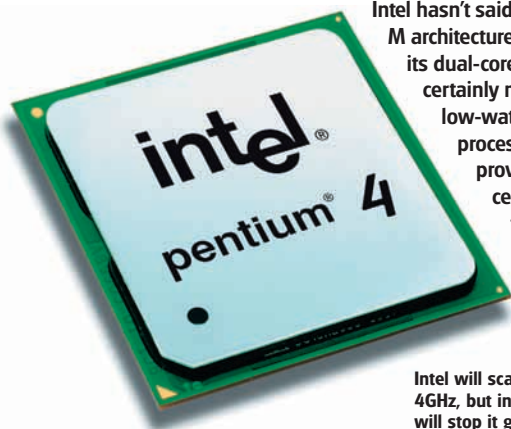
At Intel's Microprocessor Technology Lab (MTL), plans for 'scaling out' rather than 'scaling up' the processor line have always been on the drawing board. As Steve Pawlowski, Intel Fellow and head of MTL suggests, multi-core technology has tremendous possibilities and potential. "[We] have the transistor count (thanks to Moore's Law) to do incredible things we could only dream about a few years ago. Basically, instead of having one big x86 processor, you could have 16, 32, 64, and so on, up to maybe 256 small x86 processors on one die."

A split decision

But why make the change now? The signs were there if you cared to look hard enough. There have been several reports that chips fabbed using Intel's 90nm manufacturing process have suffered electrical leakage - both the Prescott and Dothan processors presumably suffered delays because of it. Even with most of the leaks plugged, increasing the transistor count on single-core designs pushes the thermal envelope higher and higher. P4s currently consume around 90-100W, and this figure will increase as Intel pushes the existing Prescott architecture towards the 4GHz mark. Compare this to the 80W drawn by the old 130nm P4s, and the cool 25W consumption of the fastest Banias-core Pentium M.

Intel hasn't said whether the Pentium-M architecture will be the basis of its dual-core chips, but it would certainly make sense. The low-wattage Banias-core processors in laptops have proved to be a great success for Intel so far, and the new 90nm Dothan core will only extend

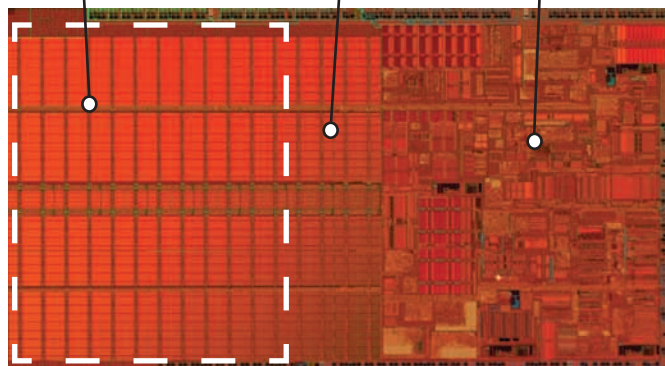
Intel will scale up the P4 towards 4GHz, but increased heat problems will stop it going higher.



By adding a second processor here, an Intel dual-core system could share a central L2 memory cache.

While a P4 has a TDP of around 90-100 watts, the Pentium-M operates at a much cooler 20-25 watt level.

A large 2MB L2 cache currently dominates the real estate on the new 90nm Dothan silicon.



Although Intel has released no specific details, it would make sense to adapt the existing Banias and Dothan architecture (above) for its dual-core chips.

this mobile dominance. Take a look at the Dothan die shot (pictured) and you'll see that the increased L2 cache takes up the majority of the silicon. By reducing the size of the cache, and adding a second processor, Intel could conceivably create an efficient dual-core solution with very little increase in die-size.

The advantages of dual-core processors over single-core chips are obvious. As Pawlowski points out: "You can make [dual-core processors] more efficient. You can spend more of the transistors doing computation. Our goal used to be to get as much performance out of instruction-level parallelism as possible. Looking ahead, we're trying to go back to a really simple core but use many of them so they can take less die area, be more efficient, and we can put more capability in the algorithm."

The power of two

This would bring obvious multithreading benefits. Intel's existing HyperThreading technology has already made some headway here, but it has been a virtual solution, fooling the P4 into believing that it had two processors. A dual-core chip could run separate processing threads that, as Intel points out: "can enable the delivery of more capabilities, performance, and flexibility to end users beyond processor speed." It signals the end of the old gigahertz race.

But such a dual-core design also has wider implications beyond the silicon. "This will have profound changes for both hardware and software developers," says Palowski. "For example, this means that programmers have to think of programming in a different model and breaking their algorithm up, where applicable, to take advantage of multiple processors. Otherwise, you have *n* processors and one of them is doing all the work, and not very efficiently, and the others are sitting idle."

In essence, Intel is gambling on the idea that lots of small, lower-performance cores are just as good as one big, high-performance core. What codenames these chips will have, or what core architecture they will use is unclear, as is the impact that dual-core processors will have on Intel's new processor numbering system.

But as Intel president Paul Otellini explained to financial analysts in New York this month, the reasons for the change in strategy are remarkably simple: "we could not ship desktop and notebook processors at 150 watts. We just couldn't do it."—Dean Evans

THE MONTH IN NEWS

→ No sooner has Sony announced that it has a 9x DVD writer, than Plextor (www.plextor.be) is yelling that it has two **12x speed DVD/RW** drives ready to roll. The PX-712A IDE and PX-712SA offer 12-speed DVD+R and 8-speed DVD-R recording, reportedly enabling a DVD to be burnt in under six minutes.

→ In an attempt to lessen the gap between the Pentium-M and the Mobile Athlon 64, AMD has announced the launch of low-powered 2700+ and 2800+ processors designed for ultra-lite laptops. Acer (www.acer.co.uk) will be first to feature the new chips inside its smartly designed Ferrari 3200 machine.

→ Dynamic Solutions International (www.dynamicsolutions.com) is currently promoting its new DS13200 **solid-state disk drive**, which uses DRAM modules rather than a traditional platter to shift data at 3GB/s – that's 250 times faster than a conventional HDD. But expect this new technology to be pricey.

Things To Come

Mobile erotica will be banned from all mobile phones. Will people really pay to opt in?

The Telegraph headline reads: "net mobiles will increase porn threat, fear parents". In the story itself, a survey reveals that seventy-three per cent of the parents interviewed: "fear the launch of 3G handsets in Britain could threaten children's safety".

But are phone users – whether children or adults – seriously going to pour over porn on a low-res screen three centimeters square? Stuck in an airport check-in queue, or hanging around waiting for a bus, would you really want to tap into a webcam to watch Wendy do her special thing?

Julia Dimambro certainly hopes so. She's the CEO of a Barcelona-based startup called CherrySauce.com, which specialises in 'mobile erotica'. "It's the accessibility," she says. "Sexual arousal is impulsive. With the Internet you have to wait until your partner's gone to bed and you're in front of a computer. But you always have your mobile with you."

And according to Julia, "mobile erotica actually helps develop the industry as a whole, because it's a sure fire way to get money in." Companies like Vodafone and 3G pioneer, Three, have spent millions purchasing their spectrum licenses and rolling out their infrastructure. But at the same time these providers need to protect their brand names against adverse publicity. "I've

"People don't want to announce that they enjoy looking at adult content"

worked in the adult industry coming up to three years," says Julia, "and I have never met a gentleman who is opposed to looking at adult entertainment. It's becoming mainstream, and I think the Internet has helped that a lot. But there is still a minority who can make things difficult for the mobile operators."

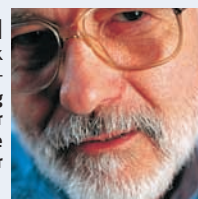
Which accounts for the new code of practice the network operators clubbed together to introduce at the beginning of this year. "With AOL on the Internet," says Julia, "parents can block out adult sites manually. But the mobile operators have gone the opposite way round and decided to do an opt in service." In effect all phones are automatically banned from sites like Julia's, and individual users have to ring the operator and prove they're over 18 to get access. "But people don't want to announce the fact that they enjoy looking at adult content. There's a whole social stigma still attached to it." Julia tells me that the automatic barring started on January 1st. "Our figures dropped by half overnight," she says.

Not one of the world's most pressing current problems, I'd have thought. But she's got a point. This costly new technology will need users burning up the bandwidth if it's to become cheap and widely available. So perhaps we had all better check in with our network operators and sign up to view the smut.

Chris Bidmead

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Chris Bidmead has been using and writing about computers for more years than he cares to remember



Legal matters

The data costs of good corporate governance can be stratospheric. Backing up just isn't good enough.

We endure daily info-overload. A huge chunk of this is email – as much as 50 per cent of a business' critical information is stored in email. And, as if they haven't got enough to worry about, IT managers now have a ton of legal considerations to bear in mind when storing email and business data. They must ensure that all their staffmembers comply with the provisions of the Data Protection Act and the Human Rights Act, while government legislation requiring the retention of certain emails for specified times is set to become a top priority. And that's just in the UK.

Over on the other side of the pond, the laws pertaining to corporate governance have been considerably strengthened in the wake of the Enron debacle. The US Sarbanes-Oxley Act contains stiff provisions for record retention and audits. It strongly discourages anyone from altering, destroying, hiding or falsifying records in response to a federal investigation or bankruptcy proceeding. The penalties are severe: up to 20 years in prison for CEOs and chief financial officers, and fines of up to \$5m per violation, per person. 'Sox', as it's affectionately referred to, isn't confined to US corporations either – it applies to any company with a New York Stock Exchange or NASDAQ listing.

Sox is biting too: in 2002 five Wall Street firms were each fined \$1.65m for failing to maintain email records for the required two-year periods. Even the

"Be warned: simply backing up your email data isn't good enough"

mighty Microsoft has fallen foul of unguarded comments made in emails three years ago when they were used in evidence against them in the DoJ litigation.

The costs of complying with the data retention regulations can be stratospheric. Companies must review all of the servers and storage mechanisms used in their business, including redundant systems and messaging services, such as email and instant messaging. In large organisations this could quite easily run into the millions. As well as defining and imposing a data retention policy, companies also have to take active steps

to ensure that the data that is kept is archived in such a way that it can't be altered; otherwise it becomes inadmissible in court. So simply backing up your email data isn't good enough.

In fact there's a code of practice covering the legal admissibility of electronic documents, the British Standards Institution

Code of Practice for Legal Admissibility and Evidential Weight of Information Stored Electronically. There are several specialist backup tools that comply with this standard, such as @rchive-it's MailStore. These utilities operate a policy-driven message retention, management and restoration system, backing up your email data and then cryptographically 'sealing' it. Archived emails are still accessible for viewing but unalterable. The EU is considering legislation that goes further still. Don't say that you haven't been warned.

Roger Gann

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After first qualifying as a solicitor, Roger got suckered into IT journalism and now combines both these skills.



THE MONTH IN NEWS

→ Microsoft has decided that the risk of viruses from unpatched computers outweighs the need to stamp on pirates. As a result, even Windows XP installations proudly flying the Jolly Roger will be allowed onto Windows Update for Service Pack 2. This is a controversial issue, and the first step towards accepting that catching the

latest virus or dodgy Budweiser screensaver no longer just puts your machine to risk, but anyone on the Internet that it can tap into.

→ The British Video Association (www.bva.org.uk) claims that 1.67 million UK net users have downloaded films and TV programs over the

past year, with a subsequent cost of £45 million to the retail market. Of course, you have to wonder how many of those downloads were of shows not available over here just yet, and in many cases, not due to be distributed. Oddly however, the BVA also reported a 61 per cent sales boost in 2003. No comment...

"Quotepad"

(the only time when words are worth a thousand pictures...)

"It doesn't have near the features of the Media Minds' PictureAlbum software I released ten years ago, but it's a great step forward for Linux." – **Michael Robertson of Lindows.com**, doing a bang-up job of promoting his OS.

"Search has become a lot more than we think of as search." – **Yahoo CEO Terry Semel**

"Just opt out!" – 'Spam King' **Scott Richter's** motto, now available on his own clothing line

"The claim 'piracy ... will destroy our society' was unlikely to mislead by exaggeration or to cause undue fear and distress." – The **Advertising Standards Authority** gives the green light to FACT's recent cinema ads.

INTEL

Making Intel's 64-bit U-Turns

A miscalculation by Intel or a clever marketing move?

It's not often that the words 'PC' and 'archaeology' can be used together. But dig down to the foundations of any modern multi-GHz machine and you'll find an architecture that hasn't changed since the mid-80s. Enter Itanium, which was started in December 1991 as an implementation of some advanced 64-bit design ideas.

It's now 2004, and in February Intel announced, rather quietly, that the next versions of its Xeon server range would have very simple 64-bit address extensions. It also announced that it would be producing consumer 64-bit processors based on AMD's x86-64 architecture rather than on its own technology.

So after 13 years, many billions of dollars, and an ongoing collaboration with some of HP's best engineers, what the hell happened to Itanium? Strangely, the mist and shadows surrounding Itanium has been an impressive strategic success for Intel. The mere existence of the project killed competing server-line designs such as Alpha, PA-RISC and MIPS. Only IBM's Power series and Sun's UltraSPARC are still in the running, and



both are having design problems of their own.

But any longer term strategic advantage would be meaningless without the existence of real silicon. Intel's forthcoming multi-core Tanglewood Itanium variant, due to appear in 2006, may save the day here, with speeds up to ten times those available from today's comparatively slow and power hungry Itanium iterations.

Cynics will say Intel has made performance promises before and never delivered on them. But there are portents that Tanglewood may be the real thing. Meanwhile AMD's more conventional 64-bit Opteron range will be pushing hard on the desktop, and also looking for an entry to the lucrative server market. IBM and Sun will be offering multi-core processors of their own, and the move to 64-bit Windows will gather momentum. As for the future? Only the bravest will try and call it. – **Richard Wentk**

ON DEMAND TV

The BBC as a Broadband Broadcasting Corporation

Will the BBC's Internet TV trial lead to a change in viewing habits?

For the last few months, the BBC has been hard at work on two very exciting projects – on demand television and the Creative Archive, a freely downloadable collection of its past works. Almost no other television companies in the world have the ability to pull either of these undertakings off at such a level, courtesy of the BBC getting much of its money from the license fee, not having advertisers to get in the way, a huge back archive that can be drawn from, and working under its tight mandate to push TV that will benefit the country.

Of course, this doesn't mean that Auntie is planning a complete rollout of its content – much of it is owned by other companies and production houses, and much of its cash comes from overseas sales. Luckily, from our point of view, existing license fees should largely cover this, leaving only a few billion people out of the global loop. Jingo all the way, as they say.

This on-demand Internet Media Player (iMP) setup, currently being trialled in the UK by BBC staff, is based around a broadband computer system, and can deliver content to PCs and PDAs. It's a natural extension

of the corporation's existing policy of archiving radio shows on its website, enabling users to listen to shows whenever they want to, or catch up on programming that they missed the first time around.

While the scheme has its critics (largely from people who risk losing out on potentially lucrative repeat fees), this is an exciting project. The BBC has the chance to carve out a whole new niche and hopefully prove how successful content can be without the need for over-restrictive DRM. It's already started with small experiments, such as releasing *The Archers* and creating its own open-source video format Dirac (<http://sourceforge.net/projects/dirac>). The big decisions are still coming however – how the BBC will finally choose to use its opportunity, and if the results really will prove a giant leap forward for legitimate online content. – **Richard Cobbett**



THE MONTH IN NEWS

► Microsoft has unveiled a new way for 'legitimate' e-mailers to get their posts through to **Hotmail** subscribers. Each has to stump up \$20,000 as a bond, forfeited in the event that they get caught spamming. It remains to be seen if it will be an effective deterrent and Alternative (smaller) bonds are available.

→ The US Government, led by Senator Rick Boucher, is pushing for a new law to help American consumers get around the **Digital Millennium Copyright Act (DMCA)** for personal use. If successful, it will mean that people will have the right to make their own copies – something that is technologically possible today,

but protected by the law against breaking encryption. If successful, the new legislation will inevitably float around the world in time.

→ After years of success with tiny, unobtrusive text ads, **Google** (www.google.com) has decided to move up to targeted ad banners.

Desktop Diary

At worst, the PC is an outdated and compromised device. Is there really a better alternative?

If you're like me, you'll have got used to dealing with spam and viruses. They are inconvenient, but they're a fact of life, and if something does get through my defences then it's a pain, but rarely fatal – and unless I tell you here, no one is likely to know, anyway.

If you are running the IT systems for this year's Olympics in Athens, however, anything going wrong is going to happen in the full glare of publicity. So it was interesting to discover how the problem is being managed, and as it turns out the approach is remarkably straightforward.

Rather than have a few, large systems running everything within a logical Fort Knox, the organisers have gone the other way, creating a network that consists of lots of small PC servers, each running a specific task. Then comes the real trick, for as such hardware is relatively cheap, most of the budget can then be spent on network monitoring software. As each server has a known workload, any change (as in one of them being hacked) can be instantly spotted and acted on.

Now bear with me as we jump sideways to XML acceleration. XML is the protocol that enables applications work together – you order something over the web and it's XML that passes the messages between databases, stock control, delivery management and billing applications. It's great stuff, but long-winded, so lots of it clogs up our business systems. Enter Conformative Systems with not only some software geared to speeding up this task, but a dedicated box in which to run it. And this is not just any box, for this uses an

"It's effectively a single-chip Grid computing system on a stick."

ASIC-based parallel processor – it's effectively a single-chip Grid computing system on a stick.

So here we have a server that is definitely not 'general purpose'; it's dedicated to performing one task better than anything else possibly could. In so doing it also saves money, for one box is the equal of at least 10 general-purpose servers, and costs at most twice as much as one.

Combining these two themes, we can come up somewhere both interesting and, arguably, better than what we have with general purpose PCs. If our domestic computing systems could be constructed from smaller systems, each dedicated to a specific task and built on the technology best suited to the job, the compromises of the PC would practically disappear. We could then buy in the services we need rather than rely on the packages of largely wasted technology we get now. Lastly, burn the software into silicon to make it really motor – and force the vendors to try much harder to get the whole thing right in the first place!

Then take a look at a Wi-Fi card and think about what is inside it, and you have the ideal form factor. You could plug your personal data into a domestic system, or move it to your PDA, or somebody else's system, as needed. You could carry your card wherever you went, and as we move towards renting computer services rather than buying them, such computing service providers could give us such cards for 'free', just like mobile phones now. Wouldn't this be a far better way to work?

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Martin Banks has been a journalist writing about hi-tech since 1968 and computers since 1977.



GRAPHICS CARDS

Radeon X800 XT vs. GeForce 6800 Ultra

Who wins the latest bout of graphical one-upmanship?

The battle for the hearts, minds and wallets of PC enthusiasts was rekindled again this month, with the launch of two new graphics cards – Nvidia's GeForce 6800 Ultra and ATI's Radeon X800 XT. Both cards represent major steps forward in visual processing and make use of the latest 130nm technologies to achieve some stunning performance. So the question, as ever, is this: which one of the two is faster?

While ATI's 9800 cards trounced Nvidia's GeForce FX boards the last time these two companies clashed, the results of this latest contest are considerably closer. Nvidia's GeForce 6800 Ultra is based on its NV40 chipset, operating at a clockspeed of 400MHz and features 256MB of 1.1GHz DDR-3 memory, 16 pixel pipelines and 6 vertex shaders.

ATI's Radeon X800 XT offers a similar specification. Based on its R420 design, it motors along at a clockspeed of 520MHz and boasts similar 16-pixel pipeline/6-vertex shader architecture. Its memory is a little faster at 1.2GHz, but the bandwidth difference is negligible.

The ATI's have it

On paper, at least, the Radeon X800 XT seems the better, quicker card with a single-slot form factor and a higher clockspeed. In contrast, the early GeForce 6800 Ultra board overhangs the nearest PCI slot, and this version needs two ATX cables and a 480W PSU to power it, although Nvidia has recently announced that production models will feature a less fiddly single power connector.

In its favour, the 6800 does provide support for DX9's Pixel Shader 3.0 technology, although there's no guarantee that developers will make use of it any time soon. Considering the prices these cards are being sold at – Dabs.com has priced the 6800 Ultra at £394 and the X800 XT at £297 – both will provide more than enough power to last well through 2004 and into 2005.



But back to the original question: which one of the two cards is faster? To test the cards, we installed each one in the same mid-range machine, an AMD Athlon 2800+ system with 512MB of

Nvidia's GeForce 6800 is huge and power-hungry. Unlike ATI's card, it supports Pixel Shader 3.0.

COVER STORY



ATI's Radeon X800 XT wins this latest battle of the cards, but its advantage over Nvidia's GeForce 6800 Ultra board is not as great as many people expected.

DDR400 memory. The three graphics benchmarks – 3DMark2001SE, 3DMark 2003 and Aquamark 3 – were run at a default resolution of 1024x768 pixels in 32-bit colour, using the latest ForceWare and Catalyst drivers. For comparison purposes, the benchmark results are shown against scores for an older ATI Radeon 9800 XT card, which was tested in the same Athlon 2800+ PC.

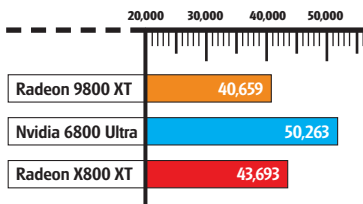
Big numbers

In these initial tests, both cards show a decent leap in 3D performance compared to the 9800XT, and this is especially apparent in the DX9-heavy 3DMark 2003 benchmark, where the scores are almost twice as high. Crucially, there's only a small gap in performance between the 6800 Ultra and X800 XT, although the ATI card wins two out of three benchmark runs. Notably, the biggest gains over older cards will be in the higher resolutions, where the visual loads are heavier.

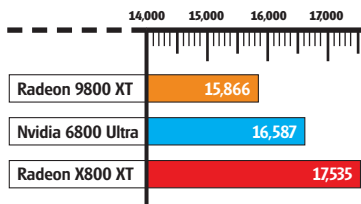
The numbers here suggest that ATI's card is the best solution, but Nvidia's low-clocked, Pixel Shader 3.0-equipped 6800 may have more scope to improve and outlast it. There's little between the two cards, but if past battles in the graphics market are anything to go by, it will be the variants of these two models that ultimately decide whether ATI or Nvidia triumphs. ATI, for example, will sell a cut-down X800 Pro, with only 12 pixel pipelines, while Nvidia plans slower cards with slower clockspeeds and less VRAM.

Do you need a graphics card that's this fast? If Microsoft's Longhorn system requirements are anywhere close to being true, then a potent GPU will get the best out of the proposed 3D features of the Aero Glass GUI. Primarily, however, these two cards are built for gaming, designed to get the best out of Doom 3 and Half Life. –Dean Evans

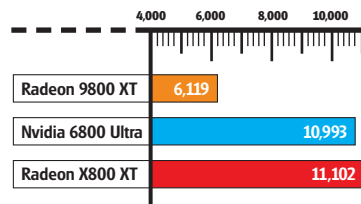
AquaMark 3



3DMark2001SE



3DMark 2003



THE MONTH IN NEWS

→ Symantec (www.symantec.co.uk) has finally decided to stop sending out spam warnings. One of the biggest annoyances in recent months has been the rise in e-mail address spoofing, resulting in millions upon millions of fake alerts being sent out to totally innocent third-parties (not least our own e-mail addresses!). Future

versions will keep quiet, and it shouldn't be too long before all the other anti-viruses join suit.

→ The US Federal Communications Commission (FCC) has recently announced plans to broadcast wireless broadband signals alongside existing analog UHF TV signals. With the advent of

digital terrestrial television, the analog spectrum is being freed up as broadcasters make the switch. While TV broadcasters obviously fear interference to their own signals, the existence of such a wireless broadband system would be a boon for rural areas, where traditional wired access is limited.

PREVIEW

939-PIN PROCESSOR

VIA K8T800 Pro, Athlon 64 3800+

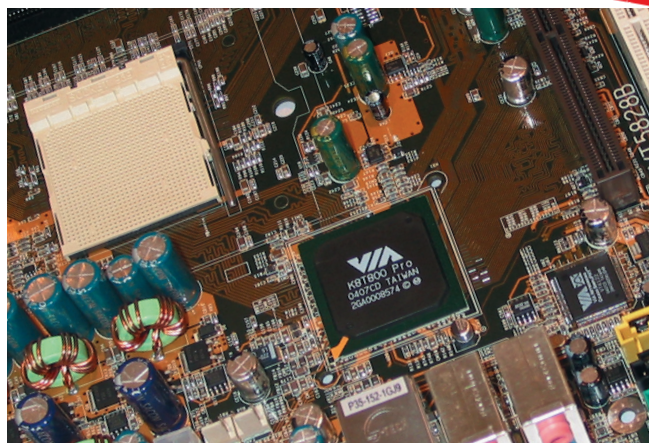
Intel may be struggling with its single core processors, but AMD seems to be having no such problems

Proving that there's nothing boring or predictable about the motherboard industry, VIA is poised to release a fresh spin on its K8T800 motherboard chipset. It's just in time to take the shine off of Nvidia's new nForce3 250 board, which you'll find lurking inside the Evesham's Axis 64 Force, reviewed on page 47.

VIA's new chipset, cunningly labelled the K8T800 Pro, boasts support for the newer socket 939 connector, as well as boosting the HyperTransport link from 800MHz to 1GHz. In order to show off the potential of this new chipset, VIA has exclusively supplied PC Plus with a motherboard based around the K8T800 Pro, complete with an as yet unreleased socket 939 AMD Athlon 64 3800+, which is clocked at a cool (and joyously speedy) 2.4GHz.

This new processor packaging ushers in support for unbuffered dual channel DDR400 memory, and the memory benchmark in SiSoftware Sandra measured the throughput of this new processor with a fairly impressive score of 5,859MB/s. This is finally on a par with the sort of values that Pentium 4 owners have enjoyed for some time.

However, this increase in memory performance doesn't seem to translate into a massive increase in speed, with the results from the usual gamut of PC Plus benchmarks lagging the aforementioned 3400+ machine from Evesham. The 3DMark 2001SE and 3DMark03 scores of 19,832 and



VIA's K8T800 Pro motherboard boasts support for AMD's 939-pin 3800+ chip and it also boosts the HyperTransport link from 800MHz to a full 1GHz.

5,842 respectively have both been bettered by nForce3 250 powered systems recently, and this is a trend that's echoed in the Aquamark3 benchmark too. The result from this benchmark is an impressive, yet hardly stratospheric 43,060.

In VIA's defence, this motherboard obviously isn't finished, and there is still scope for some tweaking, especially when it comes to the memory performance. Even so, the early indications we get from testing suggest that the increase in performance garnered from the boost to the HyperTransport link is nominal at best, and it could just be that the move to a 1GHz link will really only benefit multiple processor systems. We'll look at this new chipset in more detail soon.

TOP BUYS

THE BIG SELLERS

What's 'geek' and what's weak? Who's buying what on the Internet?

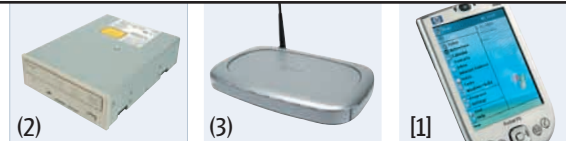
- (1) Sony 12/24GB 4mm DDS3 Tape Cartridge (£6)
- (2) Pioneer DVR-107 DVD+-R/RW Internal IDE 8x OEM (£68)
- (3) NETGEAR DG834G 54Mbps Wireless ADSL Modem (£105)
- (4) MSI DR8-A DVD+-R/RW 8x Internal IDE drive (£72)
- (5) Microsoft Optical Wheel Mouse (£11)
- (6) Mitsumi 1.44MB Internal 3.5 Floppy Disk Drive (£8)
- (7) Maxtor DiamondMax Plus8 40GB UDMA133 IDE HDD (£41)
- (8) Maxtor DiamondMax Plus9 80GB UDMA133 IDE HDD (£47)
- (9) HP Photosmart 7350 Inkjet Printer (£70)
- (10) HP NO.56 Black Inkjet Cartridge (£17)

Brought to you in association with:



If April's sales sheet is anything to go by, PC users are swapping out their old DVD-ROM and CD/RW drives in favour of 8x rewritable DVD units. The message is getting across that

Netgear's DG834G wireless ADSL modem router is one of the best ways to get web-connected fast and easily, although the popularity of 3.5in floppy drives comes as something of a surprise.



- [1] HP iPAQ h4150 Pocket PC (£260)
- [2] i-mate GSM/GPRS Pocket PC (£576)
- [3] HP iPAQ h2210 Pocket PC (£234)
- [4] Nokia 6230 Graphite (£303)
- [5] palmOne Treo 600 (£470)
- [6] Sony Ericsson P900 (£490)
- [7] i-mate Smartphone 2 (£350)
- [8] Sony Ericsson P800 (n/a)
- [9] Apple iPod 40GB MP3 Player (£350)
- [10] Navman 4410 Bluetooth GPS (£247)

Brought to you in association with:



Over at Expansys, meanwhile, mid-range PPCs remain strong sellers, with only palmOne's Treo 600 flying the flag for alternative OS's. Note too, the continuing trend for smartphones...

CORRECTIONS

→ The correct cost of the **Corex CardScan 600c** featured in PC Plus 216 is £180, not the £347 price that was printed. We apologise for any confusion this caused.

→ In our recent wireless Lab test in issue 217, 'The Invisible Network', we unfortunately

included incorrect details for one of the featured suppliers, **Itchest**. The correct telephone number for this company is as follows: 0870 162 0840, while you can find it on the Internet at: www.itchest.co.uk. PC Plus would like to apologise for this printing error and for any inconvenience that it may have caused.

→ Finally, and again in PC Plus issue 217, the review of **Macromedia Breeze** incorrectly refers to version '3' of the software, when the software that was tested was the newer Macromedia Breeze 4. We apologise for this error. However, all of the comments made by the writer in this review remain applicable.

This series	Part One	Part Two	Part Three
Graphics In .NET	Drawing and filling geometrical shapes on a form	Using graphics to display images and fancy text	Adding movement to create simple animated effects

Displaying images and text

PROJECT TIME



1 HR 45 MINS

SKILL LEVEL



4 INTERMEDIATE
You'll need a basic working knowledge of .NET and C#

YOU'LL NEED THIS



Visual Studio .NET, C#Builder or another C# development tool, the MS C# compiler, the .NET 1.1 framework

FILES ON SUPERDISC



Any files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

Huw Collingbourne puts last month's Masterclass to use, and explains how easy it is to display bitmap images and fancy fonts

In the first part of this series, we looked at some basic graphics operations that enable you to draw geometrical shapes and fill them with solid colours and gradients. Now we're going to take things a step further, moving on to consider how we can load bitmap images from disk and display strings filled with colours, gradients and patterns.

Before we get started on images and strings, let's take a look at one more way in which we can fill geometrical shapes. You'll recall that last month we used two special types of Brush object: a SolidBrush and a LinearGradientBrush. There is, however, another type of Brush, a HatchBrush, which can be used to fill a shape with a seamlessly repeating pattern.

We'll explain how you can put this to use. Load up the SimpleGraphics.sln solution from this month's SuperDisc. This contains the examples from last month, plus some new code in button5_Click(), which draws a rectangle filled with a hatch style:

```
FillRect(new HatchBrush(hs,col1,col2),10,10,200,200);
```

Here is a HatchStyle variable (which we shall look at in more detail shortly), with col1 and col2 the colours to be used. The final four integers are the rectangle co-ordinates on the form. Note that we have surrounded this line by a try...except

exception handling block. If a fatal error occurs, such as a non-existent hatch style being passed as a parameter, an error message is displayed – such as 'Exception: Invalid parameter used' – but the application won't crash.

The variables hs, col1 and col2 are declared earlier in the code and initialised to default values. The HatchStyle variable, hs, is initialised to HatchStyle.Sphere. If, on running the application, you click the button labelled DrawHatch, the Sphere style is the one that will be used. You can pick a named style at design time using the usual drop-down selection list which appears when you place a full-stop after the class name, HatchStyle.

I decided that it would be useful to be able to select a style from a list at runtime too, so that the user could alter the hatch style used. It turned out that coding this is a bit more complicated than you might think.

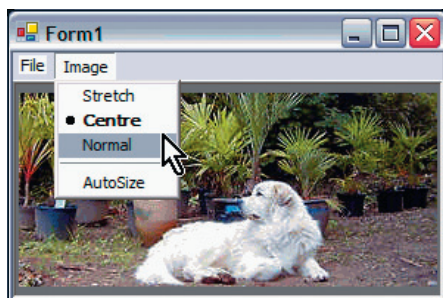
1 Enumerating hatch styles I wanted to display the integer value and the name of each hatch style in a combo box. In order to select a new style, the user would just pick it by name. Initially, I had thought that it might be possible to enumerate through the HatchStyle constants from a minimum to a maximum value. I soon discovered that this is simply not possible. See the box 'Enumerating hatch styles' on page 180 for an in-depth explanation of the problem.

My solution was to determine the actual number of hatch styles available (53) in advance, then add these to the

Bouncing checks

Check marks in menus can provide useful feedback to the user

Below you can see that our Image menu displays a radio-style check mark before the selected item.



In the Images.sln solution, you will see that the items in the Image menu display round 'check marks' alongside them when selected. The normal style of check mark on a menu is a tick. This alternative style can be substituted by activating the RadioCheck property for each menu item. Just like a radio button

on a form, a radio-check can be used to indicate that a set of menu items provides alternatives – only one of which may be active at any time. However, bear in mind that the check marks do not provide this behaviour

automatically. It's up to the programmer to do this.

In our code, we have implemented this in the ImageMenuClick() method. The Click event of each item in the Image menu has been directed to this method by selecting the method name from a list alongside the Click event in the Properties panel. The code examines the sender argument in order to determine which of the menu items was clicked, turns on the check mark for that single menu item and turns it off for all other items. Finally, it applies the appropriate SizeMode to the picture box.

We've decided that the image is centred by default, so we've not only added a check mark to the 'Centre' menu item, but displayed the text of that item in bold. This item remains in

bold, to show that it's the default, even when the check mark has been moved to some other item. To put a menu item in bold, you just set its DefaultItem property to true. A single menu item can, in fact, have more than one default item, in which case each of them will be shown in bold. When a menu contains a default menu item, that menu item can be immediately selected by double-clicking the menu to which it belongs.

Try this out by running Images.sln. Select the AutoSize item from the Image menu and verify that this now has a check mark alongside it. Close the Image menu by pressing the Escape key. Now double-click the Image menu. When you subsequently open the menu you should find that the default Centre item is selected. ■

PCPlus Back Issues

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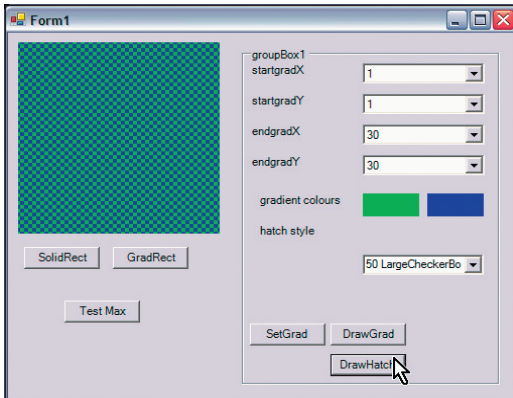
<http://forum.pcplus.co.uk>



Huw Collingbourne

huw.collingbourne@futurenet.co.uk

Huw Collingbourne used to program for pleasure. Now he does it to keep his pet dog in Bonios



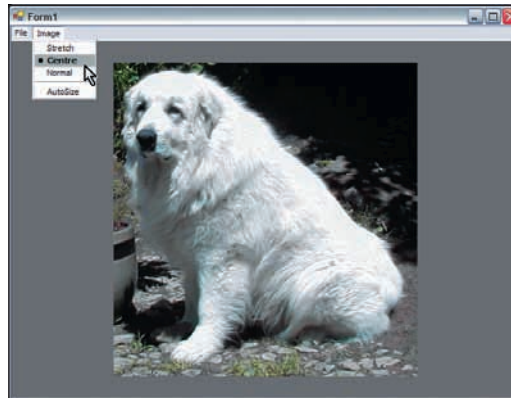
In our first project we use solid, gradient and hatch brushes to fill a rectangle with colours and patterns. Here a hatch brush has been used to create a pattern in the LargeCheckerBox style.

combo box when the form is loaded. Adding the integer values is, of course, quite simple - we just convert the integer iterator variable, *i*, to a string. But how do we add the descriptive name? Fortunately, this too is quite easy. We simply cast the integer variable, *i*, to *HatchStyle* and then use the *ToString()* method to return the string name of the style. The end result is that the combo box displays items such as '44 DottedDiamond'.

A hatch style needs to be applied after the user has made a new selection from the combo box. We do this using the *hatchcombo_SelectionChangeCommitted()* event handler. This gets the integer *SelectedIndex* property of the combo box, casts it to *HatchStyle* in order to retrieve the style at that index in the *HatchStyle* enumeration, then passes this to our *FillHatchPanel()* method. This method fills a small panel on the form to show a 'preview' of the selected hatch style. It does this by obtaining the *Graphics* object, *g*, of the panel (as explained in last month's column), then using the *FillRectangle()* method with a *HatchBrush* object as its first parameter. The *HatchBrush* is initialised with the *HatchStyle*, *_hs*, and two colours in which the hatch is to be drawn. The same technique is used in *button5_Click()* to fill a rectangle on the main form with the hatch fill.

2 Loading and displaying images Let's now move on to a different type of graphic operation. In addition to painting graphics on-screen using brushes, there may be times when you need to load an image file from disk. The .NET framework makes light work of this. To display an image on a form, all you need to do is set its *BackgroundImage* property to a file name on disk. At design time you can do this using the Properties panel. Image formats supported include bmp, gif, jpg, jpeg, png and ico, emf and wmf.

If you want to create an image-viewing application, however, you may find that a *PictureBox* gives you more control over the display of the image. Load our *Images.sln* solution for an example of a simple image-display program. This comprises a form containing a picture box and a menu. We have given the picture box a different background colour to the form, then set its *BorderStyle* property to *3DFrame* so



Here I've loaded a picture of my dog, looking usually clean, into our image-viewing application. I've selected the Centre item on the menu to centre the image in the form.

that you will be easily able to distinguish this control from the form itself.

The File Open menu item takes care of loading an image. In the *Form1()* constructor, we set the default directory path to three directory levels above the executable file, followed by the *\Pix* subdirectory. If we retain our default directory structure, this will cause the file dialog to open in the *\Pix* directory beneath the main directory for this month's projects. If it doesn't open there, you'll need to browse to that directory - or to any other directory containing image files.

Loading the image itself is done using the *Bitmap* class's *FromFile()* method to initialise an *Image* object. This is then assigned to the *Image* property of the picture box.

3 Resizing images at runtime Now, at design time the programmer has no way of knowing the size of an image that will be loaded at runtime. If we have a fixed-size picture box, a large image may be clipped so that only a part of it is displayed.

We can fix this particular problem by setting the *Dock* property of the picture box to the *Fill DockStyle* in the *Form1()* constructor. This causes the edges of the box to 'stick' to the insides of the form itself, so if you can't see a large picture in its entirety, you can simply resize the picture box by resizing the form. But what if we've loaded a large image that we want to reduce in size or a small image that we want to zoom to fill the entire area of the form? It turns out that the picture box control comes with a *SizeMode* property, which can be set to *StretchImage* in order to fill the entire form, making the image shrink and grow when you resize the form.

We've supplied an *Image* menu in this application which enables you to select alternative *SizeModes* at runtime. When set to *Normal*, the image is displayed at its default size in the top-left of the control, and at the centre when set to *CenterImage*. Be careful when selecting *AutoSize*, however. At first sight, this may appear to have the same behaviour as the *Normal* mode, because both modes display the image at its default size and align it to the top-left. However, there's a fundamental difference. *Normal* mode positions

PASSING SHOT

When creating the user interface for a program, you should try to ensure that it looks just as neat when the form is maximised or resized as when it's displayed at the original size. When controls are arranged side by side, with no gaps, you can make them align by setting their *Dock* properties. This is easily done using the Properties panel. A small *Dock* diagram pops up and you can click the left, top, right and bottom to make panels 'stick' to one side of the form or container control. To make them fill all available space, click the centre. You can also manage docking in code by setting its dock style like this: `this.panel1.Dock = System.Windows.Forms.DockStyle.Fill`. There may be occasions when you want to leave gaps between controls, such as panels and buttons, but you still want them to remain in the same positions - relative to each other - when a form is resized. In this case, use the *Anchor* property. For example, to place a fixed-size panel at the top left of a form, set its *Anchor* to *Top, Left*. To have a panel to its right grow in width when the form is resized, set its *Anchor* to *Top, Left, Right*.

Extreme Programming Adventures in C#

Learn all about good programming practice – if you can make it to the end of the book

TITLE Extreme Programming Adventures in C#
AUTHOR Ron Jeffries
PUBLISHER Microsoft Press
PRICE £28 (£24 ex VAT)
ISBN 0735619492
SUPPLIER Computer Manuals
www.compman.co.uk

'Extreme Programming' (or XP) is a new approach to software development, its core values being 'simplicity, communication, feedback and courage'. It encourages team-based software development in small pieces of code that are regularly evaluated and revised. This book starts out by analysing the ideals of XP in some detail. It then

moves to hands-on C# coding using the XP methodology. The author develops a complete application, an XML editor, and explains how the XP methodology has helped him, documenting his failures as well as his successes.

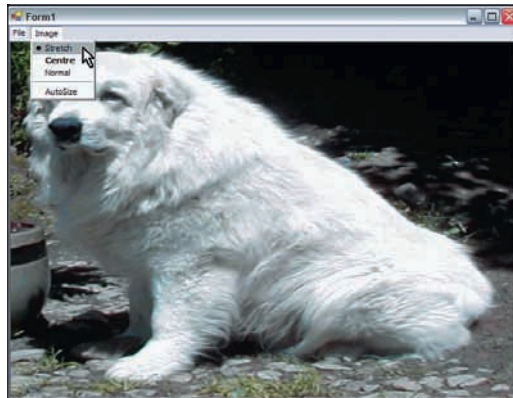
I must say that I find this book too monolithic to read from start to finish. One for the bookshelf, I fear! ■



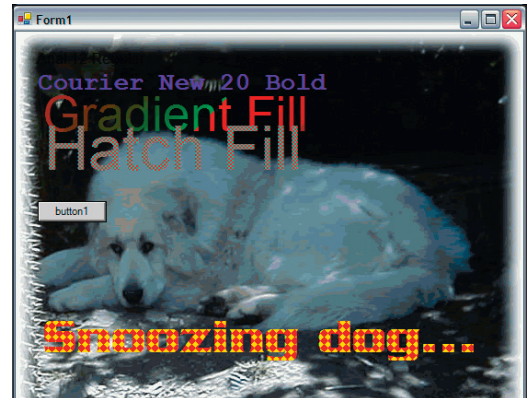
Everything you need to know about Extreme Programming – but it's a laborious read.

GOING FURTHER

You can experiment with the creation of text with shadows by drawing a gradient string for the shadow, then drawing a solid string over this, aligning it slightly above and to the left of the shadow. One brush we haven't look at is the TextureBrush. This enables you to load up an image and use it as a background to fill a shape or string. You can find all the information you need on texture brushes in the help system of your .NET IDE.



To make an image align itself to the boundaries of the form, select the Stretch option. The image will then be resized automatically when the form itself is resized.



Brushes can be used to create fancy text with gradient and hatch fills. Here, text is displayed over a bitmap which has been loaded into the form's BackgroundImage property.

the image but leaves the picture box unchanged. The AutoSize mode, by contrast, resizes the picture box around the image. Once you have done this, setting other modes may have no effect, because the picture box is now a different size from when you started out. As we have given the picture box a different background colour in our application, you will be able to observe the difference between Normal and AutoSize.

4 Fancy fonts and colourful strings Finally, let's see how we can apply graphics effects to help us create fancy font displays. At first sight, fonts may seem to have little to do with the graphics we've discussed so far in this series, but in fact, they're very closely connected. You draw text onto a graphics surface in much the same way as we previously drew rectangles and circles. In common with those simple

geometric shapes, each character can be filled with colours, gradients and hatches using the appropriate brush.

Load up the Text.sln solution and find the button1_Click() method. Here you will see that we begin, as usual, by obtaining a graphics surface, gr. Next, we call the gr.DrawString() method to take care of drawing some text. The first argument is the string to be displayed. Next comes the font, which is defined using the font name and its size. There are various Font constructors, all of which can be read about in the help system. The next argument to DrawString() is a Brush, which may be a simple flat colour or some other type such as a LinearGradientBrush or a HatchBrush.

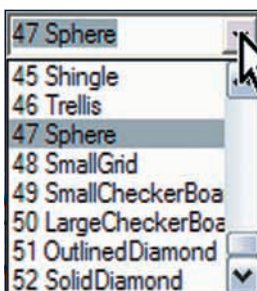
Note that the syntax for using these is the same as in our previous projects, so you can experiment with them at your leisure. **PCP**

NEXT MONTH

Now that we've painted a variety of static images, the time has come to add some movement. That is what we'll be doing next month.

Enumerating hatch styles

Question: When is Max not a Max? Answer: When it's a hatch style



In our project we obtain the integer value and string name of each hatch style, then display it in this combo box.

If you look at the help entry for the HatchStyle enumeration, you will see that it comprises values listed alphabetically from BackwardDiagonal to ZigZag. You might assume, therefore, that in order to iterate through all possible values we could set up a loop with a starting value of BackwardDiagonal and an ending value of ZigZag. Ah, if only life were that simple!

While the constants may be organised alphabetically in the documentation, they are not ordered this way in the HatchStyle enumeration itself. In fact, it turns out that BackwardDiagonal has the value 3 and ZigZag has the value 36. If you are particularly observant, you'll

see that HatchStyle also contains the constants Min and Max. It seems logical to assume that these define the lowest and highest indices in the enumeration. Not so! While Min is equal to the lowest value, 0, Max is equal to 4, whereas there are obviously far more than five hatch style constants. If you refer to the help entry on HatchStyle, you will see that Max is said to specify the hatch style, SolidDiamond. In fact, this appears not to be the case. If you click the 'Test Max' button in our SimpleGraphics.sln solution, you will see that the value of Max is 4.

When we test HatchStyle.Max for equality with HatchStyle.SolidDiamond, the test evaluates to false. If, however,

we compare HatchStyle.Max with HatchStyle.LargeGrid (which has the value 4), it evaluates to true. This curious behaviour (a polite way of saying 'bug') leaves us with the problem of discovering the actual maximum value of the constants in HatchStyle.

I did this by trial and error. First I read some other writers' estimates in various books on .NET. These varied from 52 to 54. Then I used values from 50 to 54 and tried to use them to display hatch styles. When I tried to display a style with the int value 53, the program bombed out, leading me to conclude that there are 53 valid hatch styles, indexed from 0 to 52. ■

This series	Part One	Part Two	Part Three	Part Four	Part Five
Internet Programming Techniques with Managed C++	A Gentle Introduction to Internet Programming	Working with Sockets and Protocols	Email – the inside story	File Transfer (HTTP, FTP, etc)	WinNet and other Internet Programming Techniques

Internet programming

PROJECT TIME



2 HRS 30 MINS

SKILL LEVEL



5 INTERMEDIATE
Assumes some familiarity with .NET and Win32 programming

YOU'LL NEED THIS



A .NET compatible C++ development system.
(E.g. Microsoft VS.NET)

FILES ON SUPERDISC



Any files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

Suffering from Internet buzzword overload? Dave Jewell explains the basics of layers, protocols, sockets, connections and more...

A few years ago, Internet programming was very much a side issue for most developers. These days, it's absolutely central. Whether you're doing something as basic as providing a web link in your program's 'About' dialog, or maybe building an Internet-based auto-update facility into your software, you will soon find yourself rubbing shoulders with sockets, connections, protocols, and other unfamiliar buzzwords. This month, we discover what it's all about...

To the newcomer, Internet programming can seem pretty intimidating, due largely to the huge number of buzzwords and acronyms that are involved; POP3, SMTP, HTTP, HTML, WinNet, sockets, protocol stacks – all human life is here! As with eating elephants, the simplest approach is to take things one bite at a time, so let's get started...

We'll begin by talking about protocols and layers, which are absolutely central to the operation of the Internet. When you receive email from your ISP's server, you're using the POP3 protocol to communicate with a POP3 server. Similarly, when you send email, you're using another protocol, SMTP to communicate with an SMTP server. POP3 simply stands for 'Post Office Protocol Version 3' while SMTP stands for Simple Mail Transfer Protocol. A protocol, in this sense, is simply a well-defined set of commands and responses which allow the client (your computer) to communicate with your incoming or outgoing email server.

You're probably wondering why a single protocol isn't used to both send and receive email? Why one server can't handle both incoming and outgoing mail? Suffice it to say that UNIX gurus developed many of these standard Internet protocols. Such people have a philosophy that a program should do just one job and do it well – it's a worthy goal, and perhaps goes part way to explaining the reliability of UNIX systems.

Other common protocols are FTP (File Transfer Protocol) and HTTP (Hypertext Transfer Protocol).

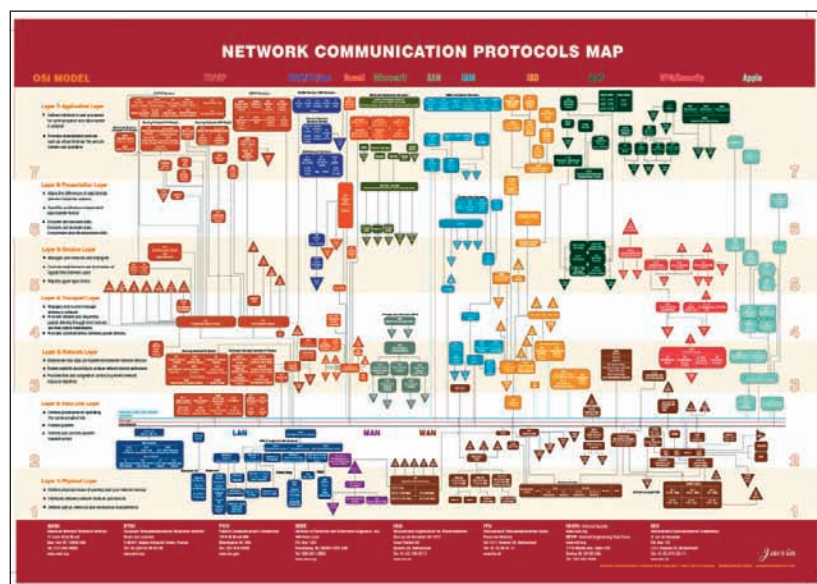
At a lower level, there are protocols such as TCP (Transmission Control Protocol) and Internet Protocol (IP), which form the low-level plumbing around which the Internet is based. We'll be exploring some of these in more detail shortly.

What do I mean by 'at a lower level'? Where does this concept of protocol layers come from? The basic idea is that lower-level protocols represent the foundation on which the higher-level protocols are implemented. Think of it as being like electronic hardware: at the lowest level you've got transistors, sometimes millions of them, which make up individual chips. The chips, in turn, are arranged together to form circuit boards. Finally, several circuit boards are arranged together to make a PC, an MP3 player, or a mobile phone. It's a hierarchical, layered architecture and, conceptually, the Internet is built in much the same fashion.

The OSI (Open System Interconnection) Model is the essential blueprint for the Internet. It defines seven distinct layers or levels, like the skin of an onion. At the bottom of the pile is Layer 1, the physical layer. This defines the hardware, which is used to establish a link between different machines, which could be thousands of miles apart. The hardware might be standard 10Mbps or 100Mbps Ethernet, or even Gigabit Ethernet. Alternatively, it might be a lowly RS232 connection. Layer 1 simply defines the hardware connection – it doesn't specify exactly how it's implemented.

Next up is Layer 2 known as the Data Link layer. Amongst other things, this layer handles errors in the physical layer, and it also determines how a computer gains access to the network and begins transmitting data. In a Token Ring system, for example, a computer can't start transmitting onto the network until it has the 'token' – it's like waiting for permission to start talking!

Layer 3, the Network layer is where things start to get interesting. This layer takes care of switching and routing issues together with addressing and packet sequencing. As you're probably aware, every computer on the Internet has a unique address. In the case of www.microsoft.com, the address is 207.46.245.214. It's Layer 3 which takes care of figuring out how to route packets to the intended network address. You might also be aware of the fact that when information travels across the Internet, it's broken down into a series of packets; if you're downloading a multi-megabyte



At first glance, this Internet Protocols roadmap poster (available from www.javvin.com) looks pretty scary, but the architecture actually breaks down into a series of well-defined areas.



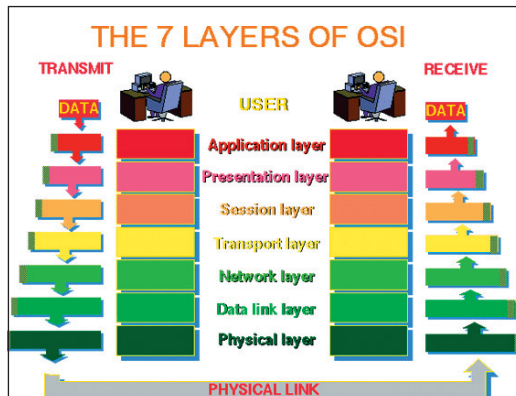
Dave Jewell

djewell@pcpmag.co.uk

Dave is a freelance journalist, consultant and programmer. He's worked with Windows since version 1!

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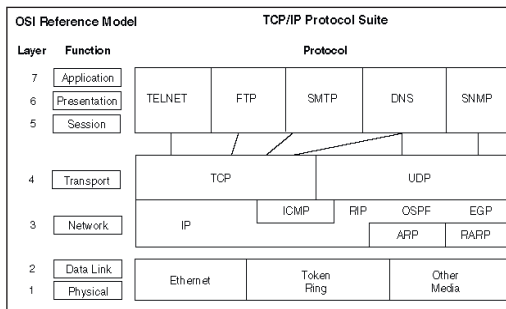

<http://forum.pcplus.co.uk>


This colourful illustration, taken from the Abdus Salam International Centre for Theoretical Physics, shows the seven protocol layers defined by the OSI networking model.

file from an FTP server, the data can't all 'fit' into one packet, so many packets are actually transferred from the server to your PC. Some of these packets will be routed in different way to others, and will arrive at your PC in the wrong order. Thus, packet 27 might arrive before packet 26 and after packet 31! The Layer 3 code is responsible for reassembling things in the correct order. This layer implements IP, which we've already mentioned.

Layer 4 is usually referred to as the Transport Layer and is the home of two important protocols; TCP, which – again – we've already mentioned and UDP, or User Datagram Protocol. The .NET application framework library contains a couple of classes, TcpClient and UdpClient which can be used to implement simple client-side TCP and UDP applications, something which we may cover in more detail later.

It's important to understand the difference between these two protocols. TCP is a connection-orientated protocol, which means that a virtual link is considered to exist between the



The TCP/IP Protocol Suite provides an alternative (and somewhat simpler) way of looking at the layered protocols inherent in the OSI seven layer model.

two ends of the connection. It's also a reliable protocol; errors are flagged. TCP guarantees delivery of whatever data is sent along the connection unless – of course – there's a hardware fault. For this reason, TCP is the basis of many higher-level protocols such as POP3 and FTP.

By contrast, UDP doesn't use connections and isn't a reliable protocol. The data you send to the destination might just get lost in hyperspace, and you'll never know it wasn't received successfully. Sounds pretty useless, right? Actually, there are some advantages to having an unreliable protocol such as UDP, one of them being that because network overheads are lower, it's more suited to real-time applications. You could use UDP to implement a simple real-time chat program; if someone's comment occasionally gets missed, it's not the end of the world.

One of the most important aspects of the TCP protocol is the introduction of port numbers. This is explained elsewhere (see 'Sockets, Connections and Ports') but, in a nutshell, TCP enables a specific process on a server to be targeted through the use of well-known port numbers. For example, web servers always listen on port 80 by convention. Thus, when

PASSING SHOT

Take a look at Microsoft's excellent www.gotdotnet.com website, which includes many interesting source-code snippets and examples. If you go to <http://tinyurl.com/3893e>, you'll find code for a simple application that makes use of the TcpClient class to communicate with a standard DateTime server, receiving the current date and time and displaying it in a console window.

The sample application includes source code in C#, VB.NET and Java, but not managed C++. However, the code is very straightforward, and if you've been following our previous adventures in .NET-land, you should have little trouble converting it to C++. If you're feeling especially adventurous, there's code for another program based around the TcpListener class; this is normally used to implement a server, since the 'listener socket' is designed to listen for connection requests. If you can – convert both of these programs to C++ and get them communicating with one another, then you have done your homework!

Your packets delivered – guaranteed

How TCP guarantees to deliver data packets across the Internet – or your money back!

As mentioned elsewhere, UDP isn't a reliable protocol. TCP, on the other hand, guarantees that a message will be delivered to the destination, barring hardware errors. To be more accurate, it guarantees that if the data isn't delivered, then the sender will be notified of the failure. The sender can then try transmitting the data again. How is this guaranteed delivery mechanism implemented?

The receiver sends special acknowledgments (ACK's) back to the sender for each packet that's been successfully received. When the sender first transmits a packet, it initiates a timeout, waiting for the corresponding

ACK to be received. If the timeout expires and the acknowledgment hasn't been received, the TCP protocol automatically resends the packet.

This leads to an interesting scenario: suppose the sender transmits a packet, which gets delayed along the way for some length of time. During the delay, the sender times out and resends the packet. Meanwhile, the original packet eventually reaches its destination. The question is, what will happen to the duplicate packet that's now working its way through the system? Fortunately, the designers of TCP thought of that: the receiver knows which packets have already been

received and duplicated are ignored.

TCP has some other clever tricks up its sleeve, one of them being congestion control. When sending a large number of packets to some remote destination, the sending code tends to initially be cautious in terms of sending speed. As the receiver acknowledges sent packets, it increases confidence that the receiver is getting the packets, isn't overloaded and that the connection is reliable. Accordingly, the sender gradually ramps up the sending speed. If it stops receiving regular ACK's, then the data flow rate is progressively reduced using the so-called exponential back-off algorithm. ■



The TCP/IP header associated with each packet contains many fields including the sequence number which is used to ensure that packets are delivered to the client code in the correct order.

Sockets, connections and ports

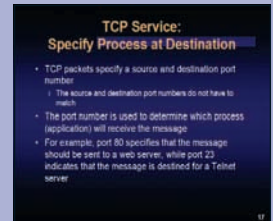
Understanding the anatomy of an Internet connection

As pointed out elsewhere, not all Internet protocols are connection oriented. For those that are, the logical connection is defined by the socket at either end. When you make an electrical connection between two pieces of equipment, some type of plug and socket is usually involved. Similarly, in Internet jargon, an

established connection terminates in a conceptual 'socket' at either end.

A socket is defined by two things; the IP address (for example 207.46.245.214) of the host machine on which it resides, and an additional port number. Port numbers make it possible for multiple servers to exist on the same machine. For example, a

POP3 server listens for a connection on port 110, while a SMTP server listens on port 25. Thus, a single machine can run multiple servers without them treading on each others toes; for example, connection requests for port 110 go to the POP3 server without being 'seen' by the SMTP server.



The use of well-defined port numbers makes it possible to specify a target process when establishing a connection with an Internet server.

GOING FURTHER

If you get into Internet programming in a big way, then sooner or later you will want a protocol analyser. This is a specialised program that shows the traffic that's passing between two computers on the network. The data can be represented as a chunk of hexadecimal bytes, but – as the name suggests – a protocol analyser is capable of understanding and deciphering individual protocols. This makes the displayed information much more meaningful. You can find a very flexible, open source protocol analyser, Ethereal, at its official website, www.ethereal.com.

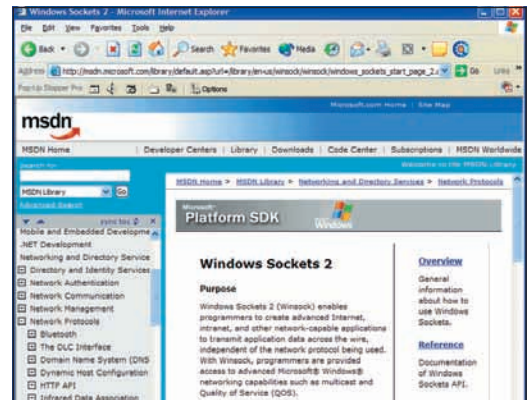
asked to display the start page of www.microsoft.com, a web browser will try to establish an HTTP connection with port 80 of that server in order to retrieve the needed HTML content.

Moving up, we meet Levels 5, 6 and 7. These are known respectively as the Session, Presentation and Application Layers. I'm lumping them together because, for our purposes, the distinction between the individual layers gets a bit blurred at this point. In fact, some people favour an alternative to the OSI 7-layer model, known as the TCP/IP Protocol Suite. It could be argued that this better emphasises the central nature of the TCP and IP protocols. In the TCP/IP model, the last three layers of the OSI model are essentially merged into one. You can see a comparison of the two approaches in the accompanying screenshot.

The main thing to notice is that the higher level protocols (FTP, POP3, SMTP, and so on) all reside at this level. This is to be expected because they're all built on top of the foundation provided by TCP/IP. It's at this level where our attention will be focused over the next few months.

Whether you use the OSI model or the simpler TCP/IP way of looking at things, you'll frequently hear the various Internet protocols referred to as a 'protocol stack'. This isn't a stack in the conventional programming sense, where successive items are pushed onto and popped off a stack. Rather, the terminology is a reflection of the way in which each successive protocol layer is implemented on top of the previous layer. This is explained more fully in the boxout at the bottom of this page.

If you're of a terminally inquisitive disposition (like me!), you might be wondering how all this stuff is implemented under Windows. The answer is that the bulk of the code is contained in a special 'WinSock' DLL located in your Windows system directory. Early implementations of the Windows Socket API (Microsoft's terminology for the API exported by the WinSock DLL) were contained inside



Microsoft's MSDN website contains programming information on the WS2_32.DLL API, but you would do better to work through the managed code interfaces in the .NET framework.

WSOCK32.DLL, but more recent implementations of the API are located inside WS2_32.DLL.

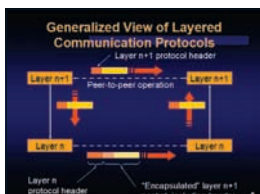
You can find programming information on the low-level WinSock API by checking out Microsoft's MSDN website. The best place to start is probably <http://tinyurl.com/2bzdd> which is the jumping off point for Microsoft's reference documentation on using the DLL. But to be blunt, I wouldn't go too far down this route if I were you. Why? Because, to be honest, using the WinSock DLL directly sucks. It's a very low-level procedural (non-OOP!) interface, which is tedious and error-prone to use. Microsoft has already done the hard work for you by building an object-oriented interface around the WinSock library, and next month we'll be exploring how to use this directly from managed C++. You'll find this a far more rewarding experience than making direct calls to WS2_32.DLL. **PCP**

NEXT MONTH

We get back into workshop mode, roll up our sleeves and start experimenting with sockets, TCP/IP protocols and so forth – all from managed C++ code.

Understanding a layered architecture

Oh, you're all wrapped up in layers, onion boy!



The housekeeping information required by high level protocols is just meaningless payload to the other layers.

The various Internet protocols are implemented as a layered architecture with no less than seven different layers being present – Layer 1 is closest to the hardware, whereas Layer 7 represents the highest level.

What's perhaps not instantly obvious is the way in which each layer is called by the layer above and calls down to the layer below. Thus, for example, HTTP is built on top of TCP. TCP, in turn, is built on top of the underlying IP protocol. You can find several interesting PowerPoint presentations at www.si.umich.edu/Courses/540/.

There's something else here that's very important; bear in mind that the

whole point of the exercise is to shift data from one computer to another. It ought to be obvious that the IP code doesn't understand the data that's being sent by the TCP layer above. Similarly, the TCP code doesn't understand HTTP. In terms of bits and bytes, each layer imposes its own particular format onto the data packets, which are shuttling backwards and forwards across the Net.

For example, we've seen how the TCP header contains a sequence number which is used to ensure that packets are delivered in the correct order. This sequence number is of no interest to the underlying IP code since it's relevant

only to the TCP implementation; it's just data from the perspective of the IP layer. Similarly, the sequence number isn't even seen by the HTTP layer because it's stripped out before HTTP sees the packet contents.

You can think of this in terms of 'overhead' and 'payload'. The overhead part of a packet is essential housekeeping information that's needed to make these protocols work. The payload is the data itself. Because of the layered architecture, the housekeeping overhead imposed by the higher level protocols is simply additional payload from the perspective of the lower level code. ■

This series	Part One	Part Two	Part Three
A Delphi Program Manager	Finding the files in the Windows Special Folders	Creating an alternative to the Windows Start Menu	Putting the finishing touches to our program manager

Program management

PROJECT TIME



1 HR 30 MINS

SKILL LEVEL



3 BEGINNER

Most of the difficult stuff is done for us by Delphi

YOU'LL NEED THIS



Delphi 7 or Delphi 8

FILES ON SUPERDISC



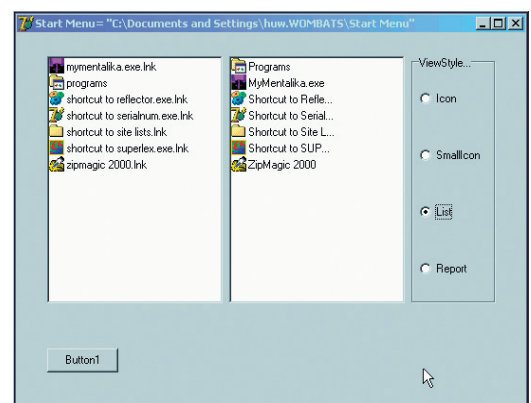
Any files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

This month Huw Collingbourne creates a multi-window program manager as an alternative to the Windows Start Menu

Last month we found out how to locate the files displayed by the Windows Start Menu. Having experimented with alternative ways of displaying these files in our own programs, we now need to design a user interface for our program manager. Here, we show you how to create multiple program groups in tiled and overlapping windows.

Before we get down to the nitty-gritty of implementing the user interface for this, let's recap the techniques required to locate the Start Menu folder on disk. This is the directory in which Windows stores the actual structure of the menus that branch off from the Start button. We find this folder by passing the constant, CSIDL_STARTMENU (defined in Delphi's ShlObj unit) to the SHGetSpecialFolderLocation() function, which is provided by the Windows SDK. This returns the actual path to the Start Menu directory. In our Test.dpr project, you'll see that we've written a function called GetSpecialFolder() which acts an interface to SHGetSpecialFolderLocation(). Our function tests that the operation is successful, and converts between Delphi strings and null-terminated strings where necessary.

1 Displaying icons in a ListView In last month's project, we displayed a list of Start Menu files in an ordinary ListView control and preceded each file name with the appropriate icon. These icons were obtained by accessing the system imagelist in FormCreate(). If this technique is unfamiliar to you, refer back to last month's Masterclass for a full explanation before moving on.

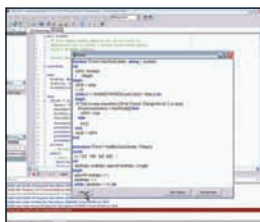


Before designing a multi-window program manager, I tested out the ListView, on the left, against the ShellListView, on the right. ShellListView has much more functionality.

If you wish, you can use similar techniques to populate other types of control with file names, with or without icons. For example, you could add file names to combo boxes, grids, buttons or cascading menus. However, it's worth bearing in mind that Delphi already comes with a control that is eminently suited to our purposes. The ShellListView, which is located on the Samples tab of the palette, has all the features of a standard ListView, plus the built-in ability to display file names and icons. In short, what we had to code long-hand into a standard ListView last month, ShellListView does automatically.

Converting to Delphi for .NET

Porting your old applications to Delphi 8 may require some planning and recoding



If your old Delphi applications don't do too many dirty tricks, you may be able to convert them to .NET with ease.

In our previous instalment we looked at translating an old Win32 Delphi app to be run by the .NET framework using Delphi 8. For simple programs, we found advantages in recoding applications from scratch using the standard .NET class library. For complex applications which use the Delphi VCL, however, it's easier to allow Delphi 8 to convert them to VCL for .NET applications. In many cases, the conversion process is automatic: just open an old Delphi .dpr project and Delphi 8 will convert it to a .bdspj (Borland Developer Studio) project for .NET.

There are a few things that may cause problems when converting old

projects to .NET. In particular, the .NET framework doesn't consider pointers to be 'safe', so Delphi .NET doesn't permit direct usage of pointers. For example, the implicit use of pointers when referencing objects will convert seamlessly. The explicit usage of pointers may not convert, and the programmer will need to do some recoding to replace these with safer alternatives. Note that Delphi's PChar type counts as an explicit pointer (it's literally a pointer to the first character of a null-terminated string), and this type may need special treatment in Delphi 8.

The PChar type is often used in Win32 versions of Delphi when sending

messages to API functions. This means that there may be occasions when your old code will need to be rewritten when it calls API functions. That doesn't mean it's not possible to call the API in .NET – you can still use many of the same API function calls as in Win32 applications.

Look at the RichEdit.bdspj project. This is a program I wrote for Windows 95, now converted to Delphi 8 for .NET. It shows a simple way of colouring keywords in a Pascal source file, making several calls to API functions, using SendMessage() to obtain a line number and work with text selections. These don't cause problems, as they don't include raw pointer types. ■

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Huw Collingbourne
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When not programming in Delphi, Huw works as a magician's assistant in a sequin-covered evening dress like Debbie McGee's

For comparison, we've used a simple ListView alongside a ShellListView to display the Start Menu files in the Test.dpr project. The first difference you'll notice when you load the project is that the ShellListView displays icons from the active directory at design time, whereas the ListView doesn't.

Now run the program. You should find that the two controls display more or less the same items. The order may be slightly different and the case of the labels will vary, but they're the same when it comes to the most important details. If you select a file icon and double-click it in each, the matching application will be launched. Now use the radio-box to the right of the form to select alternative view styles. When you select these both views are updated, with the exception that the Icon view in our ListView fails to display large icons. We'll explain this deficiency in a moment.

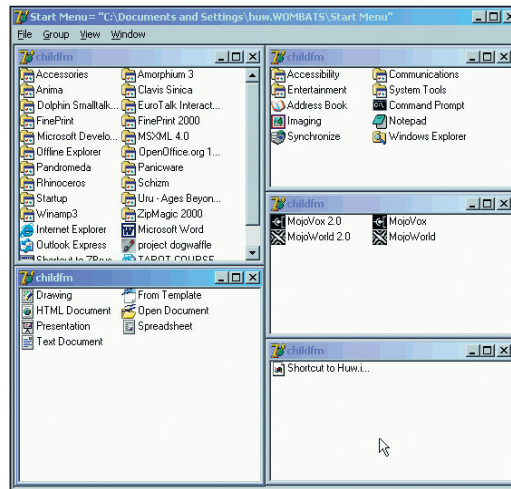
2 The advantages of ShellListView Close the application and turn to the code. Now the real difference between a ListView and a ShellListView should become apparent. All the behaviour of the ShellListView – from its display of file names and icons to the launching of an application when double-clicked – is automatic. All we've had to do is set its Root folder to the Start Menu directory with this assignment in the FormCreate() procedure:

```
ShellListView.Root
:= startmenudir+'\';
```

Here, startmenudir is a private variable that's initialised by our Init() procedure. Now look at all the code we've had to write in order to get the ListView to do what we need. First, in FormCreate() we have accessed the small system icons. Next, in ShowFiles() – which is called by our Init() procedures – we've had to find each file in the specified directory, get its matching icon and add it to the ListView. Our code has also filtered out the current and parent directory specifiers, '.' and '..', which would otherwise be added to the list. Finally, in order to implement file launching we've had to code ListView1DbClick(). This calls a routine, ExecuteFile(), in our filestuff.pas unit. Prior to doing this, we had to do a load of checking to make sure that a valid file name has been selected and the specified directory exists.

Even after all that effort, we still haven't managed to display the large icons. Adding this feature would not be difficult, so you may want to try it yourself. For a few hints, take a look at SHGetFileInfo in Win32 SDK help and also at the code of our file launchpad, LPad.dpr, which is on the SuperDisc. All the same, why reinvent the wheel? If you decide to create a different type of program manager – using menus or buttons, say – you'll have no alternative but to go through all the coding steps we've outlined so far. However, I personally feel that the ShellListView is ideal for the job, so from now on, that's what I will use.

3 Creating an MDI interface In the old days of Windows 3.1, programs were arranged as groups of icons displayed within separate windows. These windows were nested inside a 'containing' window in what's known as MDI (Multiple Document Interface) style. While this design had



This is the final version of this month's program manager. Here we have opened five separate 'nested' windows, then tiled them so they don't overlap each other.

some drawbacks – mainly due to the clutter that resulted from too many nested windows – I still feel that this was an essentially neater design than the cascading menus of the current generation of Windows. For that reason, I would like to use a Multiple Document Interface for my program manager.

An MDI application comprises a container form and a child form. Usually, many instances will be made of a child form so that multiple windows appear inside the container form. When you create an MDI project, you must have at least two forms. To make the main form, Form1, act as a container you simply set its FormStyle property to fsMDIForm using the Object Inspector. To make the second – which we'll call childform – act as a contained form, you must set its FormStyle property to fsMDIChild. Open our Test2.dpr project and you'll find that this is precisely what we've done.

Elsewhere, we've added a menu to Form1 which includes Window, New. Clicking this causes a new program group window to appear. The code of this is simple:

```
Tchildfm.Create(Self);
```

This creates a new instance of our child form class and sets the current form, Self, as its owner. There's nothing much to be said about the code inside the childform unit, apart from the FormClose() method which specifically sets the Action parameter to caFree. This causes each individual child form to be closed when the Close button is clicked. The default close action for a child form in an MDI application is to minimise the window rather than close it. Comment out this line of code to see this for yourself.

4 Merging menus Another thing to take note of is that we've given the child form its own menu. However, you'll see that this doesn't actually appear on the child form. ➔

PASSING SHOT

If you need more information on converting your old applications to Delphi 8 for .NET, start with the Delphi help system which contains some useful (if rather brief) information under the heading 'Building VCL Applications with VCL for .NET'. There's more information on porting issues in Readme.rtf in your Delphi 8 installation directory. When converting incompatible types, bear in mind that PChars and character arrays will generate errors. You may be able to get around these problems by converting to the StringBuilder or String types. Remember that .NET has many built-in conversion methods, such as ToString(), which may help you deal with invalid type casts. If you get really stuck with some piece of recalcitrant code, consider whether there might be a simpler way of accomplishing the same task in .NET – whether a complete recoding of a function might be easier than a conversion. We'll be looking at some of the trickier aspects of porting Win32 Delphi applications to .NET in the near future.

The wizard of MDI

Delphi can create multi-window applications at the click of a mouse

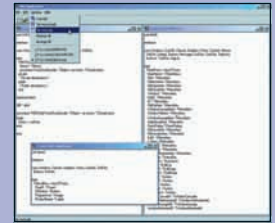
We have created the multi-window interface for our application from the ground up in this month's project. However, if you want to save yourself some effort, you can create a fairly complete MDI application using one of Delphi's project wizards.

Select File/New/Other. In the dialog box that pops up, click the Projects tab.

Next, select MDI Application and click OK. You will now be prompted for a location. Browse to a suitable directory or enter a path name in the top field then click OK once more. Your MDI application is now ready to run.

As you can see, this application isn't suitable for our purposes as it stands. It's a multi-window text editor,

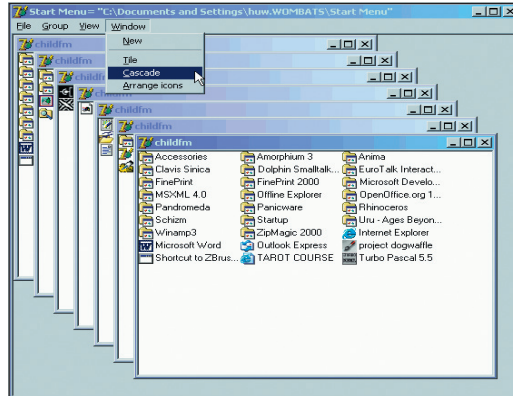
complete with menus and icons to open, close and arrange windows. If you want to create an MDI application of a different sort, you can adapt this by redesigning the ChildWin forms. Even if you don't wish to use it for your own applications, you may find some useful tips in the code that it generates. ■



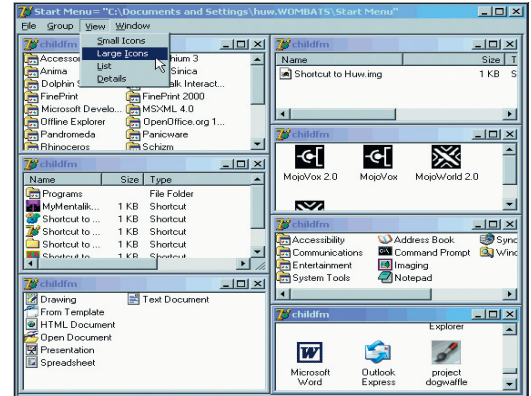
Using the Delphi MDI Wizard, you can create a multi-window text editor without having to write a single line of code!

GOING FURTHER

Now that you've created a program manager, you'll want to tailor its behaviour, perhaps by adding pop-up menus to open new windows on a selected group. Or, instead of having multiple windows, you might want to provide a menu from which the user could select commonly used groups – such as Programs or Accessories – and instantly display that group in the active window. You might also add a quick-pick menu for instantly launching your favourite applications, such as the calculator or word processor.



We've added a menu to our program manager, for switching between a tiled and cascaded view of the nested windows. The Arrange Icons option arranges minimised windows.



The Views menu is specific to the currently selected window. It enables us to display small or large icons, and to show the items in a simple list or categorised columns.

Instead it's simply merged with the main menu at runtime. Double-click the menu and select Group and View, and you'll notice that their GroupIndex properties have been set to 1 in the Object Inspector. The GroupIndex properties of the top-level items in the Form1 menu are set to 0. By setting a higher value than this, we can ensure that menu items will appear to the right of the menu bar when two menus are merged.

Turn your attention back to the main form's unit, t2, and take a look at the event-handlers for the items on the Windows menu. These simply call the Tile(), Cascade() and ArrangeIcons() methods of the MDI form. The first two methods arrange multiple open child forms – either alongside one another or overlapping – while ArrangeIcons() organises any minimised forms.

Notice that Tile() arranges forms horizontally by default – this can easily be changed when necessary. If you would

prefer them to be arranged vertically, use the following assignment prior to calling the Tile() method:

```
TileMode := tbVertical;
```

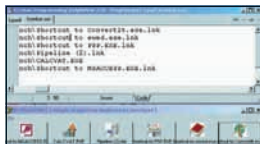
We've come a long way in our development of an alternative to the Start Menu. We have a multi-window program manager in which windows can be tiled or cascaded. It displays a single group by default, showing the top-level items of the Start Menu itself. You can navigate to the other groups by clicking the Programs group, or others branching off it. You could also display separate windows of icons containing the Start, Programs, Accessories and other groups. Groups aren't automatically preserved between sessions, and it would be very useful if you could save your favourite groups so they always appear when you run the program. This is just one of the features we'll be adding next month. **PCP**

NEXT MONTH

We'll put the finishing touches to our program manager in next month's Masterclass, including an ability to save and restore program groups between sessions.

Sensible saving

You're spoilt for choice when you want to save configuration data to disk



We save the paths of the applications in our launchpad program, LPad.dpr, in a plain and simple Text file.

If you want to restore your program manager groups each time you run the program, you'll need to save their configuration details to disk and then reload them. There are many possible ways in which you could do this. One way is to use the TIniFile class to help you save files into a .INI file. Assuming you have declared a variable called Ini of the TIniFile type, this is how you would create an INI file with the same name as your application, but with the extension '.INI':

```
Ini := TIniFile.Create(
  ChangeFileExt( Application.
    ExeName, '.ini' ) );
```

Use this code to write the integer value of your form's Top position below a category labelled 'Form' in the INI file:

```
Ini.WriteString( 'Form',
  'Top', Form1.Top );
```

When you want to read in that value from the INI file, and position the top of your form at the save co-ordinate, use:

```
Form1.Top := Ini.
  ReadInteger( 'Form', 'Top',
    100 );
```

100 is the default value, and this will be used if the code is unsuccessful in

reading back a value from your INI file. There are other ways to save form information. You could save data to a text or binary file using standard Pascal IO techniques, or you could try Delphi's powerful, if somewhat obscure 'form streaming' capabilities.

Bear in mind that some classes and components maintain a TStrings or TStringList object containing the items which they maintain. In our LPad.dpr application, for instance, you will see that we store the paths to each file on the launchpad in a string list named ButtonList. To save these paths to disk, we use ButtonList's SaveToFile() method. ■

This series	Part One	Part Two	Part Three
Graphs	Basic graphs	Drawing an axis	Finer points

Drawing an axis

PROJECT TIME



1 HR **0** MINS

SKILL LEVEL



4 INTERMEDIATE
Some programming knowledge would be helpful

YOU'LL NEED THIS



Windows 2000/
Windows XP, Visual
Studio .NET 2003

FILES ON SUPERDISC



Any files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

The tricky job of drawing the axis of a graph can be made simpler using GDI Transform methods, as **Dermot Hogan** explains

A graph gives information about the points on the graph itself. Without a properly-labelled axis, you can't tell very much about the graph's data: you could be plotting the number of sunspots against the incidence of bubonic plague, but unless it's labelled, you can't tell. The trouble is that plotting it can be quite tricky.

An axis – there are usually two – contains information such as the origin, (or zero point), and intervals. The intervals are marked by 'ticks', so you might have a tick at 10, 20, 30 and so on. There are two types of ticks – major ticks that might occur at large intervals such as 10 and 20, and minor ticks which might occur at 1-unit intervals. Each tick can have a label – usually numeric – associated with it. The axis itself should also have a label, say, 'Number of sunspots' – and, if you're feeling energetic, an arrow head at the end.

In graphics terms, an axis is a collection of lines (mostly) and text. The lines are reasonably easy to do, and last month I thought that I'd come up with a neat wheeze to make things simple by using a GDI GraphicsPath object. This enables you to add lines to a collection which you can then simply display using the DrawPath method. Sadly, as with many 'neat' programming ideas, there's a gotcha – an unfortunate fact of life that sometimes makes the thing unworkable. The gotcha with the GraphicsPath is adding text to it. Because a GraphicsPath is a connected sequence of lines and curves, if you try and add text to a GraphicsPath using AddString, you get a line joining the text and the axis lines, which isn't what we want. You can get round this by using the StartFigure method, which does allow you to do what you want, but it starts getting complicated.

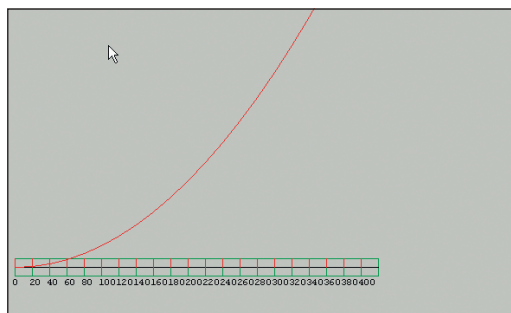
So, I had a rethink. I decided that I really needed to make things as simple as I could. I'd had a look at some examples of graphing software available on the Internet, and while they were fast, they were difficult to follow. For example, an axis would be done in one For... Next loop with major ticks,

minor ticks and labels all done together. One way to keep something simple is to keep it local, so I 'borrowed' an idea I'd come across in a somewhat different context – Knuth's TeX program. The basic idea in TeX is to keep the fancy bits of drawing characters separate from their positioning. The positioning is done by considering each character to be a simple box, and concentrating on how the boxes are positioned (see boxout – no pun intended!). It occurred to me that an axis was a little like a set of boxes, each box corresponding to a 'tick' with a possible notation to the side or below.

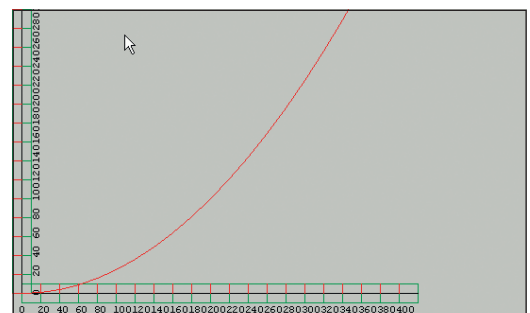
The thing about a box is that it's self-contained. The drawing co-ordinates start at (0,0) and the dimensions are the dimensions of the box. So to draw a box at a particular co-ordinate location, we have to transform the co-ordinate system to where we want the box to be drawn and then get the box to draw itself. This may sound just as complicated as doing the whole thing in a single loop, but it's really very simple. It's made simpler by another GDI trick – being able to save and restore the 'graphics state'.

The graphics state – the clipping rectangle, transformations and other things – is a GDI object, and this can be saved on the graphics stack. You can alter the transformation settings, then draw something and finally restore the graphics state to what it was previously. There are two ways of doing this. One is to use the graphics Save & Restore methods; the other involves BeginContainer and EndContainer methods. These are functionally identical, but it seems that BeginContainer and EndContainer are preferred in GDI+, so I'll use those. The first, simple AxisBox class that we'll use to draw an axis cell has just one method, Draw:

```
Public Sub Draw(ByVal v As Integer)
    Dim r As Rectangle
    Dim lp As New Pen(Color.Black, 1)
    Dim xp As New Pen(Color.Red, 1)
    r = New Rectangle(0, 0, m_xSize, m_ySize)
```



Here's a simple basic axis drawn using the box method. The bound boxes are shown in green, the ticks are in red and the axis is in black. The labels have been offset from the bounding.



This is a simple-minded approach to generating the second axis. Just rotate by 90 degrees and draw another one. Unfortunately, it's not quite what we want.

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<http://forum.pcplus.co.uk>
**Dermot Hogan**
dermot.hogan@futurenet.co.uk

Dermot Hogan has been programming in more languages than he cares to remember, for more years than he can remember

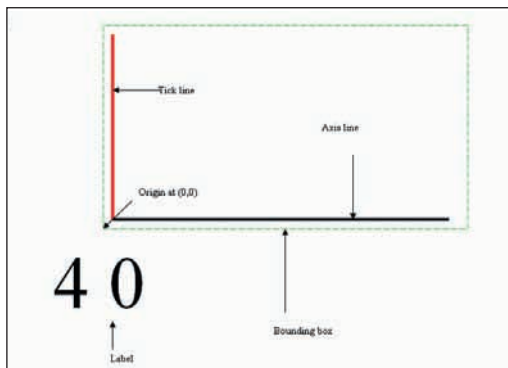
```
With m_g
.DrawRectangle(m_boxPen, r)
.DrawLine(lp, 0, CInt(m_ySize / 2), m_xSize,
CInt(m_ySize / 2))
.DrawLine(xp, 0, CInt(m_ySize / 2), 0,
mySize) ' draw the tick
.ScaleTransform(1, -1)
.DrawString(v.ToString, m_font, m_brush, -5, 0)
End With
End Sub
```

This draws a bounding box in green (so we can see what's going on – this will be removed in the final version). The horizontal and vertical dimensions (m_xSize and m_ySize) are set in the main axis code, and the axis line and the tick are drawn using these. The AxisBox is set up like this:

```
Dim b As New AxisBox(g)
b.xSize = axisTick
b.ySize = 20
```

Where axisTick is the interval between ticks, 'g' is the Graphics object and I've set the vertical axis box dimension to an arbitrary 20 units. The axis is then plotted in Axis class by DrawAxis:

```
For i = 0 To axisSize Step axisTick
gc = g.BeginContainer()
g.TranslateTransform(i, -b.ySize / 2)
b.Draw(i)
```



This is a schematic of an AxisBox or axis cell. All dimensions are measured relative to the origin of the bounding box, which makes positioning easier to follow.

```
g.EndContainer(gc)
Next
```

Note the use of BeginContainer to 'insulate' the graphics canvas at the DrawAxis level from any shenanigans at a lower level. The key call is to TranslateTransform, which shifts the origin for the AxisBox Draw method to the correct point along the axis. It also shifts the cell down by half the vertical height, so the base of the box is below the actual axis to allow for labels. This could equally be done in the AxisBox code. That's (very roughly) one axis. So what about the other axis? In theory, that's easily done ➔

PASSING SHOT

While looking at benchmarking C# and VB .NET code (see boxout below), I was musing on how much hardware had speeded up in recent years, and whether computing life has got better as a result. Clearly, a faster PC is a better PC in general. But I can only type at a certain rate.

Also, when I get a new PC, for the first few days it's really fast, then it slows down till it seems just as slow as my previous one. Obviously, the PC hasn't slowed down. Instead, I've got used to the new speed.

Then there's 'feature creep'. I really don't want any new features in Word, thanks. What I do want is bugs fixed, and to find the features I normally use in there somewhere.

Lastly, there's the tendency for new products to use those nice extra CPU cycles. Visual Studio is a case in point. With a decent size project, it's getting to be quite slow. And this is with a 2.4 GHz processor and oodles of memory. Hmmmm – time for a new PC maybe?

Benchmarks

Microsoft claims that C# and VB .NET have the same performance, but do they?

I recently came across an article (www.osnews.com/story.php?news_id=5602) benchmarking various languages – C++, C#, VB .NET, Java and Python. What was interesting wasn't the fact that C++ was the fastest, but that there wasn't that much difference between the lot of them (apart from Python). There were, however, a couple of peculiarities, such as the Java compilers' hugely inefficient trigonometric timings – all I can think of here is that the compiler ignored (possibly on purpose) the fact that the Intel chips have inbuilt trig functions.

The other oddity was the fact that VB .NET's I/O timing was three times that of C#'s. Now given that Microsoft has explicitly claimed that there's no performance difference between VB .NET and C#, there must be something going on. Initially, I suspected that 'Option Strict' hadn't been turned on.

This ensures that late binding is disabled and expensive run-time implicit conversions are disallowed. But no, a quick check of the code showed this wasn't the case: Option Strict was set.

On closer inspection of the code, it turned out that the benchmark used the old VB compatible PrintLine command to do the I/O. This 'wraps' the more fundamental data streaming commands such as StreamWriter, which was used in the equivalent C# benchmark. Clearly, there's going to be more copying going on here between the wrapper code and the underlying Stream classes. I was curious as to what difference this would make in practice, so I altered the VB .NET benchmark code to be the same as the C# code, in that it used StreamWriter and StreamReader classes. The result: the I/O time was reduced from 63.2 seconds to 47.7 seconds. This is actually

	C#VB .	NET
Integer	6.9	70
Long Integer	12.7	12.7
Double	175	173
Trigonometric	30	30
I/O	49.1	47.7 (63.2)

a tad shorter than the C# time, but this difference isn't really significant.

The results are shown in the table in above. As the author (Christopher W. Cowell-Shah) acknowledges, "designing good, helpful benchmarks is fiendishly difficult". Indeed it is, but at least I now know that C# and VB .NET are essentially the same in performance – at least on this benchmark. It also gives a pretty good reason for avoiding the VisualBasic compatibility namespace where the old style I/O functions are defined. ■

Here are the results of the modified VB .NET benchmark and the C# one (times in seconds). The original benchmark code is available from www.ocf.berkeley.edu/~cowell/research/benchmark/code/.

A .NET GDI bestiary: brushes

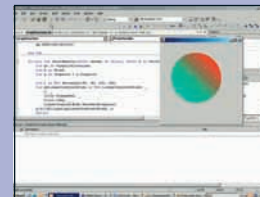
Brushes are used to fill closed figures

In the GDI, pens draw lines while brushes fill areas. The most commonly-used brush is a SolidBrush, which is used to paint an area. Usually, areas are defined by 'filled shapes', typically rectangles, ellipses, circles and so on. You will find that you need to use a brush in OwnerDraw controls. The reason is that with an OwnerDraw

control you have to do everything, including drawing the background on a Paint event. To paint the background you have to get the 'bounds' of the part that you want to paint. These are obtained from the event ... here's some code that paints a StatusBar panel red:

```
Private Sub SB_DrawItem(ByVal
```

```
sender As Object, _
ByVal sbdevent As System.
Windows.Forms.StatusBarDrawItemEventArgs) Handles
SB.DrawItem
sbdevent.Graphics.
FillRectangle(Brushes.Red,
sbdevent.Bounds)
```



Okay – so it's not a stippled zebra hatch brush. But you can do some fancy things with the new gradient brushes in GDI+.

GOING FURTHER

The **AxisBox** class currently does two different things, depending on whether the axis is horizontal or vertical. All of this logic is switched depending on a flag, **hFlag**, in the body of the **Draw** method. A better solution might be to define an abstract base class for the **AxisBox** and then define two derived classes, **AxisBoxV** and **AxisBoxH**, to implement the differences. A different approach would be to parameterise the whole of the draw method, setting the values required to draw a horizontal or vertical axis box via the **New** method when the **AxisBox** is created.

NEXT MONTH

We'll continue to add functionality to the graph with automatic scaling, resizing, labelling points and the ability to plot non-Cartesian (typically polar) co-ordinate systems.

by rotating the co-ordinate system by 90 degrees and drawing another axis:

```
gc = g.BeginContainer()
g.RotateTransform(90.0)
a.DrawAxis(g)
g.EndContainer(gc)
```

But this doesn't quite produce the result that we want. For one thing the text isn't correct. It needs to be horizontal and not vertical – but the whole thing looks to be on the right track. Next we'll look at what's needed to do the complete job.

The advantage of using the box/cell approach is that it's conceptually simple. Each box has its own co-ordinate system starting at (0,0) and, if I wanted, I could impose a clipping region to stop text and graphics seeping into the next cell. For a horizontal cell along the x-axis, it is indeed nice and simple.

However, one thing we want to do is to distinguish between 'major' ticks and 'minor' ones. Major ticks occur at a fixed multiple of minor ones – say every two or 10 minor ticks – and have a label. Normally, the label is centred on the tick, and set a little below the axis. To determine the positions for the label, we need to know the dimensions of the string, and these depend on the font and, to some extent, on the graphics surface we're drawing on.

We can determine the string size by using the **MeasureString** method of the **Graphics** object and then drawing it at an appropriate location:

```
Dim size As SizeF
size = g.MeasureString(s, m_font)
g.DrawString(s, m_font, m_brush, -size.Width /
2, -size.Height + 2)
```

This will centre the label, 's', at the centre of the tick and below it. A small problem here is that this breaks the concept of the box or cell being the 'bounding box' because the text will overlap the previous box due to the centring. Things get a bit more complicated when we look at drawing the vertical axis. The problem here is that rotating the axis isn't enough – we have to 'flip' it through 180 degrees as well. This is easily done – instead of just rotating the axis, we'll add the flip and then draw the vertical axis:

```
g.RotateTransform(90.0)
g.ScaleTransform(1, -1)
a.DrawAxis(g, False, 40)
```

You'll find that once you get into the habit of working locally and using the transforms, GDI graphics becomes a lot simpler than trying to work from a single origin.

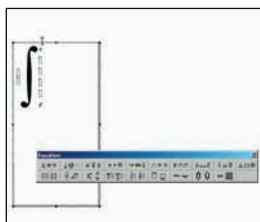
We're nearly there, but the labels have to be treated specially. This is because they don't rotate – we're not that good at reading back to front and from top to bottom (at least not in Europe). We need to unrotate the text, position it to the left of the tick and line it up with the axis. After a bit of experimentation, we get this code:

```
g.RotateTransform(90.0)
g.DrawString(v.ToString, m_font, m_brush, 0, -
size.Height / 2, m_drawFormat)
```

The **DrawString** method takes an extra argument here, a **StringFormat** object. **StringFormat** is a very useful GDI class. With it, you can add tab stops to a string and get nicely formatted displays without the hassle of using a **RichText** control. But here I'm using it to display the text from right to left, in other words to right 'justify' the label. You can see the result of this with the major/minor tick ratio set to two in the screen shot. **PCP**

Boxing clever

Underneath the surface, TeX is just box shifting. Very, very nifty box shifting



This is roughly how TeX boxes work. The rough part is that this is actually the Word Equation Editor, which is slow and difficult to use compared with TeX and LaTeX.

TeX (pronounced 'tek') is a language specifically designed for formatting mathematical and scientific literature. It was developed in the late 1970s by Donald Knuth because there wasn't anything suitable for typesetting his major work – *Fundamental Algorithms*. TeX was started before today's standard 'what-you-see-is-what-you-get' word processors were developed, and before proportional fonts were even thought of.

Learning TeX can initially be a bit daunting, and it can still be quite tricky to get PDF documents out of it, but once you've got a system set up, it really does produce mathematical and

scientific equations much better than, say, Word's Equation Editor.

One of the key ideas behind TeX is the use of boxes to represent the outlines of characters, leaving the fancy details of what's inside the box to a separate part of the program. At a low level in TeX, you just position boxes on a graphics surface. But the clever part is that boxes can contain other boxes which can in turn contain yet more boxes. This means that a TeX page is a box which contains boxes of paragraphs each containing boxes of letters.

This may not seem a particularly stunning idea. But it is – because once a box is constructed, you can forget

about what's inside it and just treat the box (and its contents) as a single entity, moving it around and positioning it as required.

Take, for example, an integral symbol from calculus. This usually has three parts: the integral symbol itself, derived from a 17th century letter 'S' for sum, the upper limit and the lower limit. The integral symbol forms one box, and is suitably sized to be quite a bit larger than the boxes for the lower and upper limits, which in a simple case just contain one character. Once the integral symbol has been formed, it's contained in a box which can be positioned by the user, via TeX macros. ■

This series

Building a Markov Chain Text Generator

Part One

How to make use of freeform text

Part Two

Dealing with large amounts of raw text as data

Part Three

How to convert data back to freeform text, and why

Part Four

Tidying up and generalising our generator program

Eating your words

PROJECT TIME



2 HRS 00 MINS

SKILL LEVEL


7 INTERMEDIATE
 General knowledge of programming fundamentals will be helpful

YOU'LL NEED THIS



Any programming language. QBasic is used here

FILES ON SUPERDISC



Any files you need to complete this Masterclass are on this month's SuperDisc. Look in the Programmers' World section

A Markov Chain Text Generator detects ingrained language habits – Wilf Hey explains all in the first part of our new Masterclass series

In previous Workshop studies, we've investigated the relationship between randomness and originality. Techniques for handling the pseudo-random numbers generated within programming environments can be used to create groups of things with characteristics that are realistic.

Often these characteristics depend on Markov Chains: the tendency (often hidden) that makes things happen one after the other. For example, today's weather has a lot to do with tomorrow's; if today is sunny, I'd be foolish to anticipate snow tomorrow. Here we observe the Markov Chain. And as we'll show you, even fiction sounds better when its action follows Markov Chains.

How can a program follow Markov Chains? That's relatively easy, once we make sure all the data we need is available. The very first two words of Herman Melville's novel Moby Dick are 'Call me', and this should be no surprise. It would be more surprising if they were 'drink turpentine', for a variety of reasons: sentences start with capitals, and 'drink' has no capital. Furthermore, combining these two words is certainly not impossible, but it's definitely rare.

Let's say for the moment that we have only read the word 'Call'; how can we anticipate the next word? If we know the author's literary habits, we may be able to say that in 20 per cent of occasions the next word would be 'me', and in 80 per cent it is 'for'. A good Markov engine takes a random number and matches its distribution against alternatives: if the random number is between 0 and .19999 it would anticipate 'me'; between .2 and .99999 would yield 'for'. What about the third word? In the same way, the Markov engine

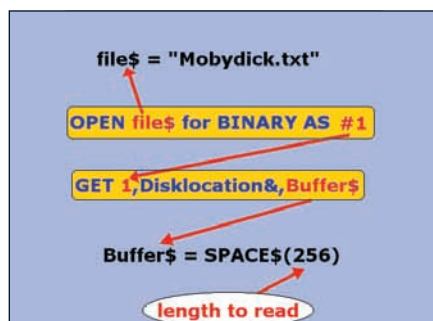
can assign a word likely to follow 'me' – or to follow 'for' if it chose that. Linking pairs of words together isn't going to make sense every time, but you'll be surprised how often it does, also capturing the essence of the original author.

I have tried Markov engines against the works of Kipling, Shakespeare, Lewis Carroll and Wordsworth. You will of course lose poetic form, but you'll sometimes produce little gems. Note that English consists not just of words, but of clauses and sentences. Fortunately for programmers, sentences begin with a capital letter and end in punctuation such as a full stop, exclamation, or query. The third word of Moby Dick is 'Ishmael', which has a full stop attached already, indicating that it's the last word in a sentence. If we distinguish between 'Ishmael.' and 'Ishmael' without the full stop, our engine will only consider new sentences to start after one of them, but not the other.

1 Buffering words The text for Moby Dick consists of words using both upper- and lower-case spellings, with punctuation attached as if it's part of the words. There are spaces between words – normally one or two. How can we manipulate this data, massaging it into a form that would be useful to the Markov engine?

First you should note that the structure of the data is freeform: it's not broken down into individual fixed-length records. Text files are often like this. Even though text-editing programs often represent the data as being made up of printable lines, with lots of spaces filling up lines to be the same length. In actuality, all that 'white space' is made up of not of spaces, but one-byte characters like 'carriage return', 'tab' and 'line feed'. If you want just the words and not the

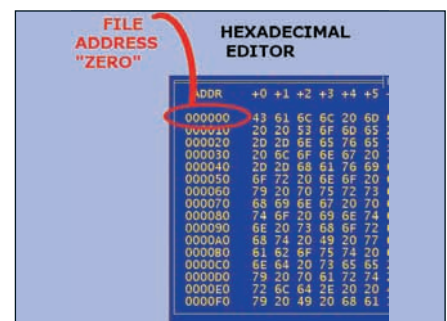
Knowing the tools available



QBasic's BINARY input scheme reads records of any length into a string buffer. The length actually read is the length provided within the GET command.



The GET command specifies the location within the file from which reading is to occur. Note that with all but the shortest files, that location must be a DOUBLE length binary (integer) value.



The first byte of a file is numbered 1 in QBasic, but technical-level users more often start the numbering at 0. Make sure you take this into account when dealing with other programs, such as disk editors.

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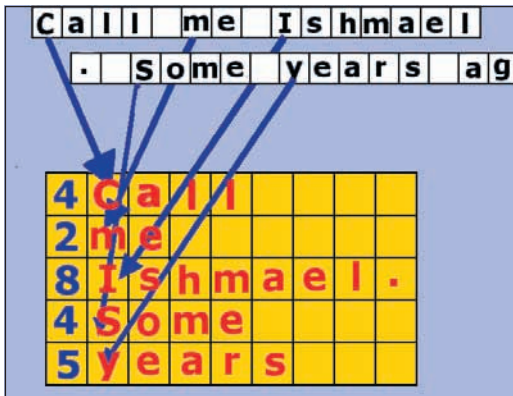


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Wilf Hey

Wilf Hey has been grappling with programming for several decades now – he has not been counted out yet

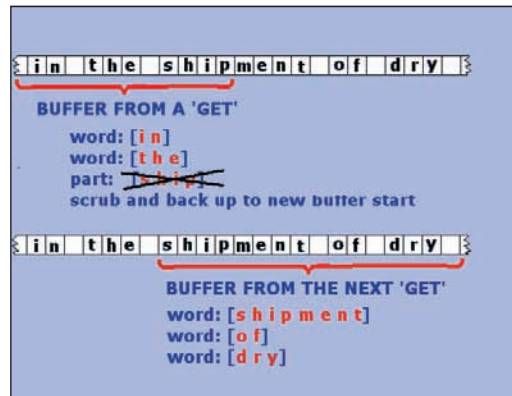


The Moby Dick text can be recorded as words and lengths, squeezing out the white space between individual words. These raw words can be sorted and rewritten as another disk file.

line and paragraph structure, you can treat them as if they're spaces, and treat all white space the same way, however long.

For our purposes, text comes in a steady stream consisting of words embedded in white space. Every pair of words has white space between it, whether that's a single space, several spaces, or some combination of control characters. I've simplified the text of the novel supplied, so there are only space characters in white space. Normally you should provide for the complication of control characters.

QBasic is well suited to string processing. You'll need to develop a routine to read individual words from the input buffer, and the commands INSTR\$ (searching for white space between words in the freeform text string) and MID\$ (for carving words out of the freeform text string). The major problem is that the freeform text string is actually the whole novel – and you won't be able to get that in memory all at the same time. It will have to be broken up into usable



Moving through the input file, the last word ending the buffer is scrapped; the next input buffer starts at that scrapped word. This overlapping data is processed twice, the first time abandoned.

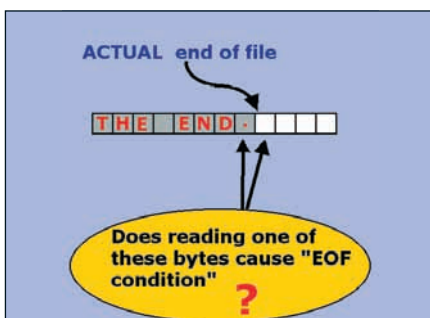
chunks. This is where QBasic's BINARY mode input/output commands become useful.

2 Reading the freeform input It may surprise you how swiftly QBasic can read MobyDick.txt in its entirety. I find the most sensible input buffer size to be 256 bytes. On the SuperDisk you'll find simple test programs, both in source format (.bas) and executable (.exe) inside a DOS box. The first, Moby01, reads the text in BINARY mode, 256 bytes at a time, then exercises tests to determine the meaning of the EOF condition. I find the QBasic documentation too slim to answer all my questions, so I build tiny test programs like this to establish exactly what happens in unusual conditions.

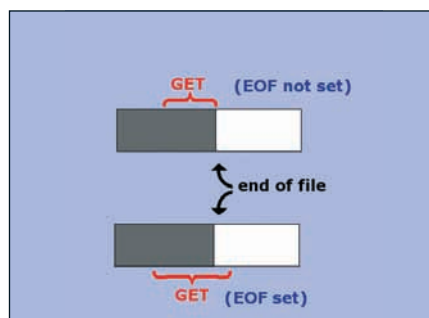
Now we must consider how to deal with individual words. A word (including attached punctuation) consists of one or more consecutive bytes, preceded and followed by white space. Remember that 'carriage return', 'form feed' (new line), 'tab' and various other characters should always be ➡

PASSING SHOT

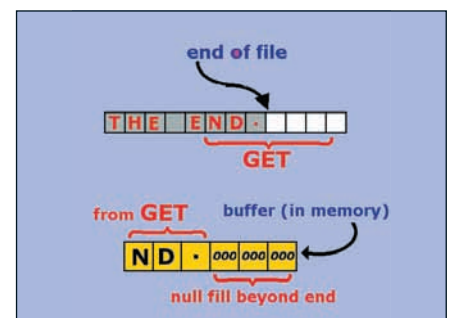
In the next phase of our Markov Chain project, we'll produce an output file summarising characteristics of the input file – the novel *Moby Dick*. Its length is quite near one megabyte, yet our summary will record information about how often any pair of words appears. For example, the pair 'white whale' may appear 314 times. Have you any idea how long this summary file needs to be? Should the run be started only if there is a great deal of available disk space? Think about the characteristics of the data we will need to produce, and estimate what will be required. Words, of course, vary in length. Will our summary file have to record words in full, or can they also be variable length? See it develop next month.



Documentation about QBasic input is minimal: be sure to satisfy your knowledge of how it works. For example, when do you get the EOF condition? Does it arise when you read the last byte of the file?



In fact, EOF is set only when there has been an attempt to read beyond the end of the file. What happens to the buffer when you try to read more bytes than are left in the file?



When you get a 'short' buffer at the end of an input BINARY file, the rest of the buffer is filled with nulls (binary zero), but you're not told where that point is. You can determine its location with the LOF function.

Shall I compare thee to a Summer's day?

In the next phase of the project, we'll be sorting words into dictionary order

What are the characteristics of comparisons done in QBasic? Are they the same as other platforms like C++? To test this, use a notebook for entering tables and charts. This is handy in circumstances involving some of the more 'useful' parts of any language. For example, it's useful in many programs to be able to respond

sensibly to direction arrows. Do you know the encoding for the left arrow, or the up arrow? Probably not – but you really should be able to turn to a table that will tell you this invaluable information instantly. Ideally it will be a table you prepared yourself through experimentation, so you know for certain that it's accurate.

Getting back to those comparisons, is 'abc' less than or greater than 'Abc'? Alphabetically speaking, 'down' comes before 'up' – are you sure this is true in QBasic? What is the rule when the two fields are of different length? Compare 'stop' to 'stopwatch' and tell me which comes first. Why didn't you know this right at the start? ■



QBasic is certainly quick, but don't rush the basics.

GOING FURTHER

Becoming familiar with the power of your programming is of great use generally. I hope it amazed you, just how fast even little old QBasic can be at 'reading' this great American novel, 256 bytes at a time. Build some test programs to determine how much slower it is when you combine both algorithms and read the individual words within each 256-byte 'page'. What's the ratio? What about when you print the 'page' number on the screen? How about when you print each word separately? (I suggest you use LOCATE and print on the same line repeatedly, because screen handling line by line is extremely slow!)

NEXT MONTH

We will continue with our Markov Chain engine, analysing the input (Moby Dick's text) and organising it into a sorted form so that it can be used to produce text in accordance with the analysed results.

treated as white space and ignored, because they are not part of any words.

This definition of 'word' leads to a few issues. The first word may have no space before it, and the last may have no white space after it. One neat way around these 'border conditions' is to attach a drogue to the data. A drogue functions like the parachute on stunt cars, helping to reduce speed. When the last word is read into memory, we can tack on white space in case there's none there. Later, as an algorithm is going through the buffer, picking off words one at a time, the last word is no longer exceptional.

We now face a more complex problem: when a buffer is read into memory (by the GET command), we may not be able to tell whether its last word is there in its entirety. If the last byte transferred by a particular GET is white space, all is well. But what if the GET has effectively divided a word?

I've dealt with this by aborting the process of isolating a word. When I hit the end of a buffer before reading white space, I go back to the start of the current word and read a new buffer from the disk, starting at that point. The last word (or part of) at the end of a buffer is processed twice, because we always scrub the word we're processing when we hit the current buffer end. The processing of each word is easy: find two bits of white space, and what lies between is a word.

```
DO
  wdstart = wdend + 1
  wdend = INSTR(wdstart, InBuffer$, " ")
  IF MID$(InBuffer$, wdstart, 1) <> " " THEN
    EXIT DO
  LOOP
```

This code is the fundamental algorithm for identifying each word, one by one. It locates the gaps between spaces and interprets each non-space gap as a word.

The MID\$ instruction can carve out the word starting at

[wdstart] and extending for a length of [wdend - wdstart]. If the word being extracted is at the end of the buffer, the INSTR function will set [wdend] to zero, providing a way to insert a test for a new GET command that's needed.

You are now equipped to read the text file as input and process it as individual words. As an exercise, create test programs to establish some of the characteristics of the text. The following details would be useful to know:

- The number of words in the text
- The length of the longest word in the text
- All the letters used in the text (counting upper-case and lower-case letters as different)
- The number of words in the text that begin with a non-alphabetic character
- Instances of words with embedded non-alphabetic characters within them, except apostrophe

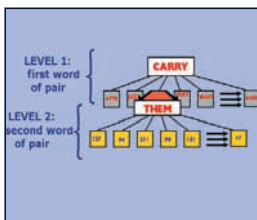
The first two of these statistics will help us gauge the size of the work (output) file, and perhaps how data will appear in that file. The others will help to identify peculiarities or errors within the text (which are almost inevitable).

You now have two algorithms: one to read information from the text file in (overlapping) chunks of 256 bytes; the other to extract whole words from each chunk, abandoning the final chunk if it doesn't end in white space. There are several ways you can construct your engine so these two algorithms are represented. Should they be independent, both called from a main DO loop? Or should the word extractor alone be called from the DO loop, and the text file reader triggered by the buffer end condition, so that one algorithm 'calls' the other? In the latter case, pay attention to border conditions so you can legitimately call for a new word, even before the input file itself has been opened.

Some variants of test programs are included on this month's SuperDisk. When you execute any of the programs, make sure that execution starts in the same directory as MobyDick.txt is recorded. **PCP**

Planning ahead

Before you program yourself into a corner, choose the structure of your Markov engine



The structure of the information file we anticipate generating to analyse Markov Chaining involves sorting at two different (and independent) levels.

The essence of the Markov engine will be to take a word, know all the 'next' words that the author uses, then select one of them at random with a similar distribution. Suppose the word 'time' is always followed by 'is' 4000 times, 'the' 12315 times and 'for' 537 times. The routine that generates a stream of word will have to do the following when it finds the word 'time':

- It will locate the word 'time' in an alphabetic index
- It will find a list of all 'next' words and the number of their occurrences, as well as the total number of times it's used (in this case, 4,000+12,315+537=16852).

- It will then select a random integer so that it can choose a word by the same distribution. In this example, a random number between 1 and 16852 is used
- One of the 'next' words is selected on the basis of the random number. Say 3182 is generated: this case falls within the scope of the first word choice, 'is'. The engine has seen the word 'time' and selected 'is' to follow it

The engine will repeat the same process for 'is' to determine a successor. It would appear that we will have to create a table with two levels of sort: each word appears at one level, and then logically below this there's a table of 'next' words appearing for each word.

There will of course be a finite number of words at the upper level – but how enormous can we expect this reference file to be if each entry at the higher level has a sorted mini-file below it? Think this out: how many distinct pairs of words can there be within this novel? Care to place a bet before we find out in the next two months?

What structure will suit this two-tier alphabetic table? Can it be constructed while passing through the novel only once? If more scans through Moby Dick will be needed, can you estimate how many? What do you think would happen with a larger work, like War and Peace? Watch this space. ■

Rants and raves


www.futureforums.co.uk/pcplus


This month **Huw Collingbourne** has a brush with the criminal fraternity, and is almost conned out of the Collingbourne millions...

Today I received a worrying message from eBay, notifying me that my account could be suspended unless I logged in at once. This was due to a security issue, which was explained thus:

"Per the User Agreement, Section 9, we may immediately issue a warning, temporarily suspend, indefinitely suspend or terminate your membership and refuse to provide our services to you if we believe that your actions may cause financial loss or legal liability for you, our users or us. We may also take these actions if we're unable to verify or authenticate any information you provide to us."

Fortunately, I was advised, all this hassle could be avoided with almost no effort on my behalf. All I needed to do was to login by entering all my user information and password. The email message thoughtfully provided a form for me to do this. One click of the button and my details would be sent back to eBay. Or would they? Call me suspicious, but I'm always wary of being taken for a sucker. The first thing I did was check the origin of the email. It purported to come from aw-confirm@eBay.com, which certainly looked tickety-boo. The body of the

message contained a typical yellow eBay-style graphic and logo, which once again added to the impression of authenticity.

Gone phishing

Ultimately, the only way to verify whether or not a message such as this is legitimate is to take a look at the HTML source code of the message. Unfortunately, I received this particular email on AOL, and there's no simple 'View Source' option on the AOL system. I therefore saved the message to disk and opened the source using the Windows Notepad. I now searched for web addresses, beginning with 'http://'. It turns out that there are a few real eBay addresses. These reference eBay graphics and various Help pages. However, the only really important address is the one to which any data I enter is sent when the button is clicked. That is, the address that follows the code 'FORM action='. This – surprise, surprise, is not an eBay address at all. The email address to which my data would have been sent (the part that follows 'value=' in a section of code starting with 'INPUT') was a private individual's address on yahoo.com. So it looks as though, had I entered my private data and clicked the button, this individual would have gained all the information necessary to access my account on eBay.

In fact, there were a couple of other clues to the fraudulent nature of this message. First of all, the fraudster refers me to section 9 of the eBay User Agreement. When I checked this, I found that this section in the UK User Agreement has nothing to do with suspension of membership. Only in the US User Agreement does section 9 discuss security.

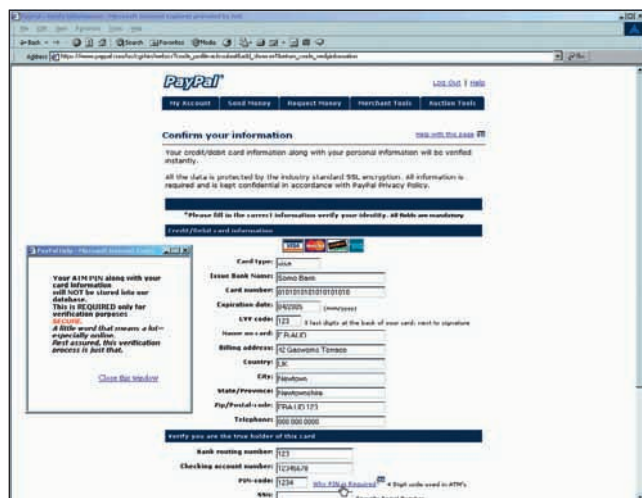
But the real give-away of this scam is quite simply that eBay does not send emails to people asking for their passwords, or any other sensitive information. Nor do AOL, Amazon, your bank or any other reputable company. Email is inherently insecure. If you hunt

around in the eBay help system – and unfortunately, this information is far from prominently displayed – you will eventually find this advice: "Some members have reported attempts to gain access to their personal information through email solicitations that are made to appear as having come from eBay. These solicitations will often contain links to web pages that will request that you sign-in and submit information. At eBay, we identify these as 'spoofed' emails or websites. Remember, eBay employees will never ask you for your password."

The email I had received was part of a so-called 'phishing' scam. The term 'phishing' describes emails or websites which fraudulently purport to represent some reputable organisation. The fraudsters behind these scams attempt to 'fish' for your personal details in much the same way that 'phone phreakers' used to break into telephone systems to make fraudulent long-distance calls in the days before email was commonplace. For more information on email scams aimed at users of eBay, PayPal and a variety of banks, refer to the Millersmiles spoof alerts (www.millersmiles.co.uk).

Web of deceit

I had thought that the eBay phishing scam to which I had been subjected was pretty convincing. But, in comparison with another scam which arrived in my Inbox a few days later, it was really quite crude. Indeed, this second scam was so convincing that I very nearly fell for it. This one purported to come from PayPal. It informed me that there was reason to believe that an unauthorised third party might have accessed my PayPal account. "Protecting the security of your account and of the PayPal network is our primary concern," it said. For that reason, 'PayPal' wanted me to re-enter my security details. As with the fake eBay email, this one contained authentic PayPal graphics. It also contained a text link to a secure

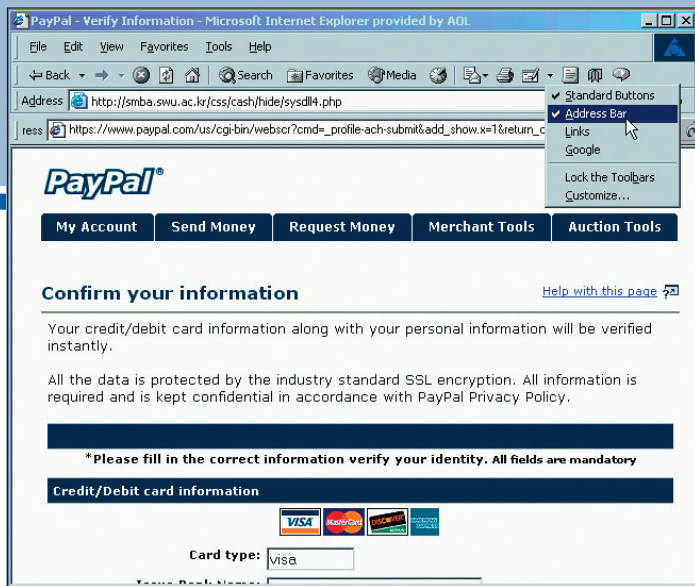


Is this a genuine PayPal page or isn't it? When I was asked to submit my PIN number I started to get suspicious...



Huw Collingbourne
huw.collingbourne@futurenet.co.uk

Huw is a direct descendant of Count Hugo von Collingbourne, whose circus of trained vampire fleas entertained the crowned heads of Europe



The fraudulent PayPal site on the opposite page displays a fake address bar. Here I've displayed the real address bar, which shows a URL in Korea!

page at <https://www.paypal.com>. Now, as we all know, secure login sites always begin with <https://> rather than <http://> so all looked well and good. When I clicked the link in the email,

credit card? I really don't recall being asked for that number before. Then again, people are asking for more and more information these days. Nobody used to ask for the three numbers on

"No, no, no! Don't fall for it! Nobody but you should ever need to know your PIN number."

my browser opened on a convincing PayPal login page with <https://www.paypal.com> displayed in the address bar. So, far as I could see, everything was above board.

It was only once I got to the page in which I was prompted to enter my details that things started to look really suspicious. I mean, did PayPal really need to know the PIN number of my

the back of my credit card, but now that has become perfectly normal. So, who knows, maybe PIN numbers are the latest thing?

No, no, no! Don't fall for it! PayPal does not ask for your PIN number. Nobody but you should ever need to know your PIN number. Nor does PayPal send emails with direct links to secure pages. A closer look at the email

message reveals what's really going on. The text link may state <https://www.paypal.com>, but the actual link, which is invisibly coded beneath this, directs you to quite a different address at a site in Korea.

But what about the login page with the <https://> URL in its address bar? As long as I end up at the genuine PayPal site then all is well, surely? Nope, the address is another fake. Some code in the web page hides the genuine address bar, and displays a phoney one in its place. The only real giveaway is that the status bar at the bottom of the browser does not display the lock symbol that indicates a secure site. But no doubt some more sophisticated phisher will add a fake lock in the next scam to come my way.

In brief, don't believe anything you see in your web browser. If that browser has been displayed as a result of following an email link, the page you arrive at could be almost anywhere. Only ever log-on to a secure site by entering its address yourself. Email scams are getting more and more deceptive. I was nearly fooled – make sure that you aren't. **PCP**

GOING FURTHER

If you're seriously hunting for books on the web, take a look at the excellent Blackmask site (www.blackmask.com). This has books ranging from David Copperfield to The Insidious Dr Fu Manchu. The University of Virginia is another great site for eBooks (etext.lib.virginia.edu). These include numerous English language and translated classics, from Aesop to Oscar Wilde. For legends, mythology, esoteric and religious works, try the Sacred Text Archive (www.sacred-texts.com). And if you still can't find what you are looking for, then the EBooks4Free links site (www.ebooks4free.net) may be able to guide you to the right place.

Free for all

If you spend a fortune on books, save some money by downloading a few

I never cease to be amazed by the quality of books that can be downloaded freely from the Internet. Many are out-of-print and out-of-copyright works, which have been converted to PDF by dedicated enthusiasts. For example, many serious artists will tell you that some of the best books on figure drawing are those written by Andrew Loomis in the 1930s. While they're no longer in print, they're freely available in PDF format at www.pinwire.com.

Drawing is just one of my leisure activities. Another is learning languages. While I have a smattering of several modern languages I have, until recently, had no knowledge at all of Latin.

Embarrassed by my inability to tell my ipso from my facto and my prima from my facie, I finally decided to do battle with all those gerunds, conjugations and declensions.

I've previously mentioned the truly excellent Cambridge Latin website (www.cambridgescp.com), which I recommend to all Latin learners, and I've since discovered some other fine resources, notable among which are a handy downloadable Lexicon (cheiron.humanities.mcmaster.ca/~barrette/latin/lexicon.html) and a collection of out-of-copyright Latin and Greek tutorials and grammars (www.textkit.com).

As part of the PC Plus Masterclass

series on learning languages, I've also embarked on a study of Chinese, and I'm currently reading the English translation of that greatest of Chinese epics, The Romance of The Three Kingdoms. Some readers may better know this as the inspiration for several popular role-playing games. Not only is the entire English text of this work online (www.threekingdoms.com) but so too are several respected books on the period by the historian Rafe de Crespigny (www.anu.edu.au/asian_studies/decrepigny). So the next time someone tries to tell you there's nowt but rubbish on the web, I suggest you direct them to some of these sites. ■



Would-be Classical scholars are well served by the Textkit site, which provides some excellent eBooks for students of Latin and Greek.

A desktop full of Ability tools

PowerPoint alternative
The Presentations element is a new feature that provides PowerPoint functionality



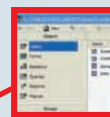
Spreadsheet
Spreadsheet can now open and save native MS Excel files while retaining layout and formatting



Word processing
The word processing package, known simply as Write, looks and feels just like MS Word



Database
The Database component contains some powerful features that Microsoft may want to take note of



Vector graphics
The inclusion of Draw allows the creation of simple vector graphics – useful for Presentations



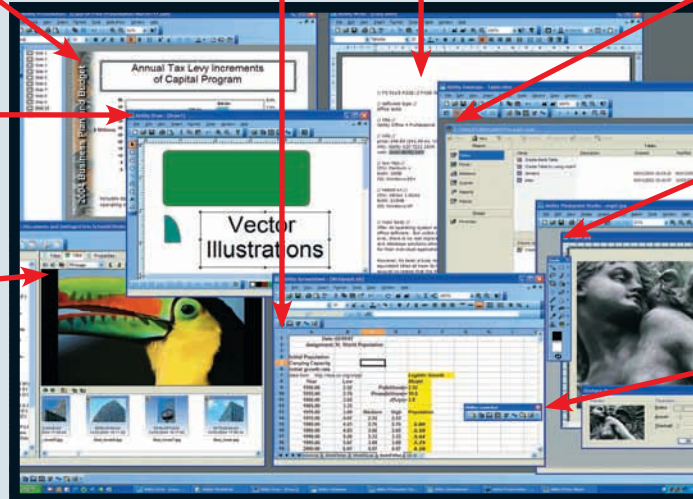
Photo Album
The simple image viewer is another new program, providing additional means of accessing such assets



Image editing
PhotoPaint may not rival Photoshop, but it certainly gives many dedicated graphics packages something to think about



Launcher
As so many individual components combine to make the overall suite, a floating launcher is available for ease of access



INFORMATION

PRICE £50 (£41 ex VAT)
SUPPLIER Ability 0207 231 1004
INFO www.ability.com

REQUIREMENTS

CPU Pentium or equivalent
RAM 32MB
OS Windows 95 or later



OFFICE SUITE

Ability Office 4 Professional

After its operating system and integrated browser, Microsoft's best-known product is probably its all-singing, all-dancing Office suite. But unlike the former options, the provision of which the average PC user will have little choice over, there's no real imperative to go along with the software giant's word processing, spreadsheet and database solutions, other than the fact that their respective formats have become the standard for their individual applications.

However, it has been a busy month for Office alternatives, with both Ability and Corel announcing equivalent titles, keen to take on the might of Microsoft. And both companies have been astute enough to realise that the Microsoft standard has become so ingrained in the corporate culture that it would be folly to attempt to re-invent the wheel, so they've kept things familiar.

With Ability Office evolving into its fourth generation, there are a number of key additions to the overall suite, as well as the usual upgraded features we've come to expect. But the key factor that will keep you from turning the page must be the price. The cost of the Ability Office suite ranges from a mere £30 for the most basic package (minus the Database and Presentation options) through to £50 for the fully-featured package we're considering here.

Existing users will be familiar with the core tools contained within Ability office: the suitably-named Write,

Spreadsheet and Database applications that correspond with those offered by Microsoft. But the latest version includes three completely new modules in the form of Presentation (to rival PowerPoint), Photo Album and Mail. These expand the potential behind the combined applications, especially when you consider the other complementary titles, Draw and Photo Paint, which cover your vector and bitmap image editing requirements respectively.

With eight complete titles available at such a low price, a high Value score is almost a given. But all this will count for nothing if the software fails to perform. Fortunately, it takes very little time to realise that ease of use and familiarity have been very much in the forefront during development.

There's more than a nod towards the Microsoft approach, right down to the menu listings and entries. This will make anyone who's familiar with the giant's software feel at home, especially when you consider that it's possible to apply visual themes to the software that will emulate Office XP, 2000 and 2003, as well as the native XP interface. Keyboard shortcuts, icons and overall performance are on a par, too and, more importantly, there's now the option to save work directly into the corresponding Microsoft format. This will prove essential if you ever need to send content to Microsoft Office users. Such seemingly minor enhancements are sure to appeal to

those on a budget, or who simply want a realistic alternative to Microsoft.

Write

Let's consider Ability's Word alternative, Write, first. The main development here must be the ability to save and read documents using the .doc format, although support for the Adobe .pdf format is also to be found. This includes image compression, file encryption and additional, more functional, options such as the ability to merge and add pages to an existing Acrobat file.

Additional features include spelling and grammar correction, although a little configuration is necessary to get this fully up to speed. Support for clipboard .rtf format, the ability to wrap mail merge fields in paragraphs and improved functionality for HTML is also to be found, while embedding images is made much easier thanks to close ties with the new bundled Photo Album software.

Spreadsheet

The spreadsheet element also finds improved Microsoft compatibility, with the facility to import and export MX Excel charts through the new Chart module. Of course, upgrades that are common across the titles, such as the interface styles, MS format compatibility, .pdf support and automated correction options, are also included here.

New tools include conditional cell formatting and data entry validation,

prompting automated error messages should an errant entry occur. Rows and columns can now be hidden, and Data filtering enables efficient row selection based upon statistical querying of previous column entries.

Improvements include the extension of the Insert Function dialogue, which now provides support for entry of parameters for the 246 functions now available. Support for 3D cell references is also implemented.

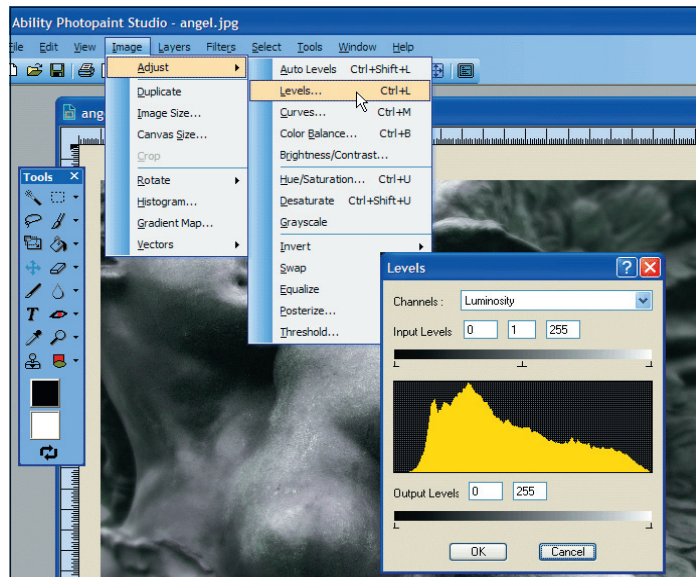
Database

Consistent with its sister titles, the Database component also finds compatibility and recognition for importing or exporting to the Access .mdb format. The revised interface, too, bears similarities to Microsoft's offering, although it can be argued that MS may want to review its own title, as the Ability variant makes such files much easier to view with sub-queries and database objects accessible from the main Database Manager view. Who would have thought that Ability would have a thing or two to teach Microsoft about office software?

Additional improvements can be found, with Sub-Forms (permitting 'forms within forms' structures), Table look-up, a new field property to display related table content and Form navigation buttons within the form window. Enhancements to reporting include Widow and Orphan controls to keep grouped fields, headers and footers together.

Photopaint

PhotoPaint gains similar interface enhancements and, in keeping with the overall suite's general compatibility with leading titles, is able to save to the Adobe Photoshop .psd format. Updated



Rather than being the weak link, the PhotoPaint software provides some powerful options that rival a few dedicated standalone image editing applications.

TWAIN technology ensures a broader range of scanners and digital cameras can be supported, and improvements to the internal colour system will guarantee that colours are rendered accurately, whatever the format.

Otherwise, the application only features a single new tool, the Magic Eraser, which complements the Magic Wand and Desaturate/Saturate tools. Although it's unlikely to threaten Photoshop directly, there's more than enough here to meet your bitmap image editing requirements.

Extras

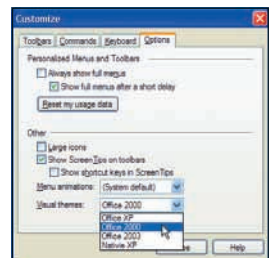
The current release has a few extra incentives that will not only encourage existing users to upgrade, but also tempt new users. The biggest addition that brings the suite up to parity with the Microsoft bundle is Ability Presentation, which provides everything that you would expect from PowerPoint. Sporting a clean and easily-identifiable

interface, the software is, again, arguably more intuitive than its Microsoft equivalent, even using the .ppt format as the default extension, making your work available to those using PowerPoint. The initial templates could be a little more imaginative, but we'll pass that by on the assumption that this is another feature that remains consistent with the Microsoft original!

Photo Album is an aspect of the suite unique to Ability, offering a simple image organiser. It does its job well enough, but options are fairly basic and, if we had to find a weak link in the suite, it would probably be here. The email client of the suite won't be available until later in the year, although it promises to support IMAP4 accounts in addition to POP3. This should make it compatible with Outlook systems; it will be available as a free download to registered users of the Professional Edition upon release.

Chris Schmidt

IN A NUTSHELL



The latest release of Ability Office sees some dramatic changes, as the collective titles embrace the established Microsoft Office standards and, more importantly, support the MS file formats that have come to dominate the corporate and home office culture. Rather than start from scratch, Ability has chosen to emulate core features of the established MS Suite with its own collection of equally capable packages. The addition of image editing and management titles, along with a PowerPoint equivalent and email client, make this a very attractive option for those on a budget, or seeking an alternative to Microsoft.

PCPlus ratings

ABILITY OFFICE 4 PROFESSIONAL

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 9

A flattering imitation

Just how realistic an alternative is Ability Office 4 to Microsoft Office Professional?

The upgrades enjoyed by the latest release of Ability Office have certainly gone some way towards making the title a more realistic alternative to the dominance of the Microsoft Suite. However, it would be overly-optimistic to expect a revolution to take place throughout the corporate climate, and Ability isn't expecting this to happen.

Nonetheless, all of the core Microsoft applications are covered here, from the humble word processor to the more demanding relational database, taking in the essential email client and spreadsheet variants along the way. Add to this the image editing capabilities through the vector-based

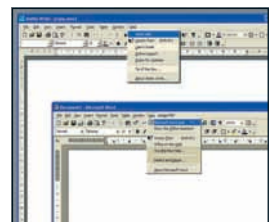
Draw and bitmap focused PhotoPaint, and you start to realise how extended the Ability package is when compared to what's taken for granted within the typical office suite.

For existing MS Office users, the Ability equivalents are presented in a familiar way, use consistent keyboard shortcuts and even have almost identical toolbar icons, making the transition from one title to the other almost natural.

However, the one overriding difference between the two applications is the price. At just short of £50, Ability Office 4 is less than a sixth of the price of the equally-featured Microsoft Office Professional, making it a very attractive

option to those on a limited budget, or anyone simply want to move away from the Microsoft monopoly.

But rather than just present a cheap alternative, Ability has provided a suite of usable tools that rivals the Microsoft options in terms of features and reliability. And not only does the suite install in a much cleaner and self-contained manner, it also manages to consistently use less system resources than its Microsoft rival. A full install of Ability takes up a mere 25MB of hard disk space, compared to the 100MB minimum of Microsoft's set. If imitation is flattering, Microsoft should be blushing about now. ■



Spot the difference. With Ability Write emulating the interface of Microsoft Word 2000, there's little to distinguish the two titles.

INFORMATION

PRICE £1,116 (£950 ex VAT)
DELIVERY £12 (£10 ex VAT)
SUPPLIER www.laptopshop.co.uk
 0870 766 1784
INFO www.acer.co.uk
WARRANTY One year
 collect and return, one year
 International Traveller's

SPECIFICATIONS

CPU 2GHz AMD Athlon 64 3200+
RAM 512MB DDR333
CORE LOGIC Via Apollo K8HTB
HDD Hitachi 60GB (4,200rpm)
DRIVES Pioneer DVD/RW, FDD
GRAPHICS 64MB ATI Mobility
 Radeon 9600
SCREEN 15in SXGA, (1,400x1,050)
SOUND VIA AC'97
SPEAKERS Stereo
COMMS 802.11g Wi-Fi, IR, 56K
 modem, 10/100/1000 Ethernet
PORTS 4x USB 2.0, 4-pin FireWire,
 2x Type II PCMCIA, Parallel, VGA-Out,
 DVI-I, Headphones, Mic
OTHER HARDWARE 3-in-1
 card reader
OS Windows XP Home Edition
OTHER SOFTWARE InterActual
 Player, CyberLink PowerDVD,
 Norton AntiVirus
SIZE 334x286.5x49mm
WEIGHT 3.72kg

ATHLON 64 3200+ NOTEBOOK PC

Acer 1502LMi

Few ever doubted the potential of 64-bit computing, and now that Intel has officially thrown its hat into the ring, we can expect to see it taking an ever-larger section of both laptop and notebook markets. However, with a complete set of 64-bit applications still some way off, the early AMD foot-soldiers like this offering from Acer, while boasting a degree of future-proofing, don't quite have the must-buy status that they might have.

It's fortunate, therefore, that this laptop backs up its powerhouse 3200+ processor with a host of features that make it more comprehensively alluring. While 512MB of RAM and a 60GB, 4,200rpm hard drive are increasingly commonplace, they're still a very respectable combination, contributing to an excellent MobileMark2002 score of 219. We're used to seeing scores of around 140 from Athlon 64 notebooks. It's difficult to say why this machine scores so much better, but we suspect that Acer's disk partitioning has something to do with it.

Graphics are also impressive, with a 64MB Radeon Mobility 9600 notching up a mighty score of 9,731 in 3DMark 2001SE and 2,637 in 3DMark2003, and for such a gutsy specification the battery life is praiseworthy: three hours and 22 minutes from filling to failure. This compares favourably with the majority of Athlon 64 portables.

There's a good showing on the data storage front, too. A DVD-RW drive is joined by the 3-in-1 card reader and, unusually, a floppy drive. More modern tastes are catered for by a four-pin FireWire connection and four USB 2.0 ports, although the latter are clustered together in a way that's sure to block bulkier attachments. Joining them on the rear panel are the usual pack of VGA, DVI-I and parallel ports, along with 56K and Gigabit Ethernet connections, but it's the wireless connections that



The 1502LMi's chassis design is familiar enough, but underneath lurks enough new technology to make this one of the best notebooks we've seen for many a month.

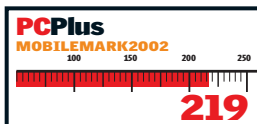
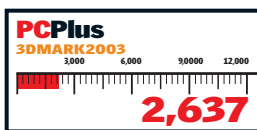
really excite; 802.11g is there for the taking and can muster a decent range. The Bluetooth button amid the shortcuts isn't connected to anything, but the side elevation offers an IR port for short-range work along with the handy expansion potential of two Type II PC card slots. This is nicely presented, too. While the chassis design is all too familiar, and the feeling of solidity comes more from the 3.72kg weight than the plastic build quality, the black, grey and silver colour scheme makes it all look surprisingly alluring.

There are a host of minor irritations that spoil an otherwise robust showing. The rattling keyboard is hardly rare and can be excused, but nerves are more likely to be frayed by the oddly-placed backslash key, and the maddening squeaking of the space bar. You'll also struggle to escape the fan noise, which is a regular and noticeable presence. In

an office environment this will pass unnoticed, but it's a chore in the comparative silence of the home. The display, at only 15 inches, doesn't compare favourably to the widescreen wonders that we're growing used to seeing, and limited viewing angles spoil gaming and DVD playback. But with acceptable response times and a resolution of 1,400x1,050, there's not too much to complain about.

Minor quibbles aside, it's hard to identify any real deficiency with the 1502. Top-end performance, a solid graphics showing and 802.11g wireless capability represent an almost universally desirable specification, and a price that doesn't go too far over £1,000 is more than acceptable. It might lack the big screen and titanic build of the beefier desktop replacements, but it's an excellent package.

Jon Hicks



PC Plus ratings

ACER 1502LMI

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	8

Not anymore.



E-COMMERCE

Actinic Business 7



A few years ago, e-commerce software was bathed in the light of extensive hype and publicity, and for a while e-business was the Next Big Thing. The take-up of e-commerce has of course been very successful, and online trading is now fully established. However, the rise to prominence wasn't as meteoric as everyone thought, and the market for e-commerce software isn't nearly as lucrative as expected. Many of the e-commerce products initially launched have either disappeared or sit quietly in the background with little development.

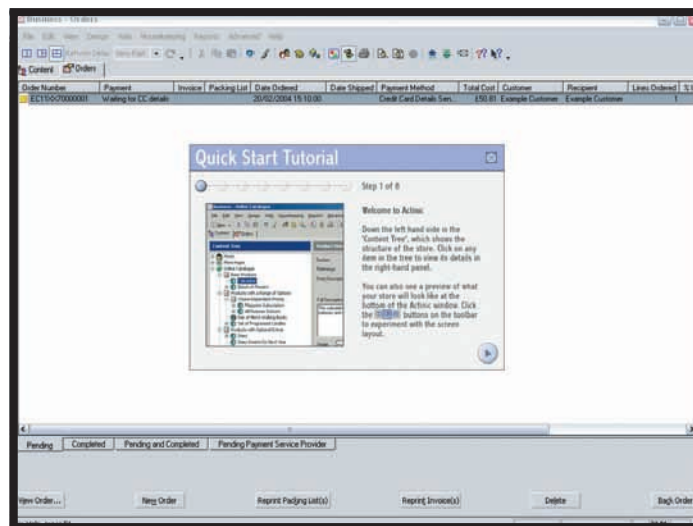
Actinic's software, on the other hand, has slowly matured into the definitive example of the breed, and the company now has a full range of e-commerce tools. Actinic Catalog is the entry-level product, still offering everything a DIY web-shop owner needs to create, publish and manage an online store. Actinic Developer offers extra facilities for the web designer, such as integration with Dreamweaver and multiple site licences. Straddling the middle ground is Actinic Business, which we've chosen to review. This offers everything found in Catalog, plus important features for the business-to-business user, and support for the more sophisticated online shop.

Means business

For a start, you get customer account management, with price schedules specific to customer groups and secure account log-ins. You can also integrate Actinic Business with accounting software like Sage and QuickBooks, and set up links to external database and spreadsheet files for your product data if required. This latest version now includes these links to Sage Line 50 and QuickBooks built-in, plus the plug-in for Digital Download at no extra charge – which is a terrific saving.

Actinic Business 7 also has a new look and feel, with the main screen for managing your store now split into panes. Along with the familiar product catalogue tree you get a form for the item to be edited in one area, and a preview of how that section of the shop will look in another. This means you can see instantly what effect your changes have as you edit products and store settings.

Based around a comprehensive product catalogue, Actinic offers sophisticated item parameters that revolve around attributes, components and permutations. Attributes can be items like colour or size, and product components can be chargeable or non-chargeable add-ons, such as



Actinic Business 7 now features a Quick Start Tutorial. This isn't the quickest program to crack, so use this feature to help you get to grips with the basic concepts involved.

'batteries', for example. Using permutations, Business can then exclude certain combinations of specific attributes from the catalogue, maybe set a new price for a variation or hide that permutation from customer groups – very clever, if a little hard to visualise until you try it out yourself.

Looking good

Once your products are loaded or imported, Business provides extensive design and layout capabilities to get the store looking just how you wish. You can choose entire themes that define the layout and colour scheme, and edit the design of whole sections or single products individually. In this upgrade you can now include new information at the point of purchase, such as marketing or promotional messages, plus additional images and product links for cross selling.

Behind the scenes there are more enhancements to discounting, with standard discounts getting a time limit field and surcharges now available for certain types of payment option. You can handle a whole range of new discount scenarios, such as special offers based on 'three for the price of two' or 'buy one get one free' situations. It's even possible to offer discounts based on the customer entering an offline coupon code at the time of purchase.

On the order-processing front, the excellent built-in, order-management system has received several useful enhancements. You can insist that a customer ticks a box to agree with your terms and conditions before an order can be placed, and orders can now be

colour-coded to assist with identification during the allocation, payment and delivery phases. For the very busy store you can also restrict which orders are shown in the order-processing list, so you can deal with yesterday's orders whilst ignoring those from today until you get up to date.

Actinic has found that shopkeepers often need to input orders into the system from other sources, rather than just the website, so version 7 enables you to enter your orders manually offline and have access to all the attributes and components for products in the order-processing module, just as if you were online.

Actinic Business does all this and handles your customers' shipping and tax calculations automatically. It provides links to 12 different online payment service providers with 19 payment options, and works with just about any host server supporting Perl and CGI.

This has to be the best DIY e-commerce product in its price range. You won't master it in an afternoon, but you can pretty much build your own version of www.amazon.com in a week or so. Actinic Business should be top of your e-shopping list.

Tim Woodward

INFORMATION

PRICE £939 (£799 ex VAT)

SUPPLIER Actinic 01932 87 1000

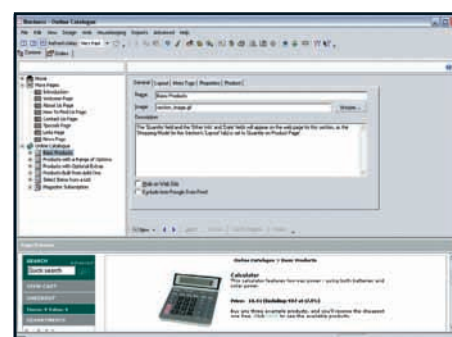
INFO www.actinic.co.uk

REQUIREMENTS

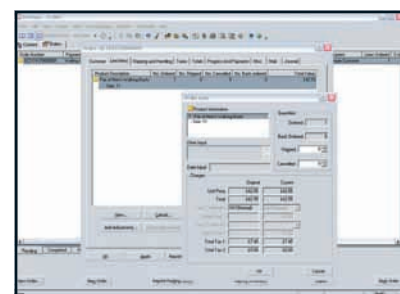
CPU 200MHz Pentium

RAM 64MB

OS Windows 95, or later



The main editing screen is split into three panes: the familiar product tree, a data entry form and a preview of your site.



Orders can now be entered offline, directly into the order-processing module.

PC Plus ratings

Actinic Business 7

Value ○○○○○○○○○○

Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 9

INFORMATION

PRICE £351 (£299 ex VAT)
SUPPLIER www.savastore.com
 0870 220 0700
INFO www.adimicroscan.com
WARRANTY Three years

SPECIFICATIONS

NATIVE RESOLUTION 1,280x1,024dpi
INPUTS D-SUB
VIEWABLE ANGLE 130 degrees
 horizontal, 120 degrees vertical
PIXEL PITCH 0.264mm
RESPONSE TIME 25ms
CONTRAST RATIO 400:1
BRIGHTNESS 300cd/m²
WEIGHT 4.5kg

17in LCD MONITOR

ADI i700



The removable feature box adds to both this screen's usefulness and its looks.

monitor-based tight-fistedness, but that's not the revolutionary part. Much more exciting is the fact that this feature box can be completely removed. 'What's the point in that?' you may be thinking. Well, for a little extra

It's difficult to say anything new about monitors. As long as they give out a reasonably clear image, which most of them do these days, they're all pretty much the same. As reviewers, therefore, we're always delighted when one breaks the mould and gives us something new. The ADI i700 is such a product.

Sold with this display is a 'feature box' boasting both a USB hub and a surprisingly powerful pair of mock-surround-sound SRS Wow speakers. The hub is unusual in these days of

outlay, you can buy other such boxes with extra functionality. You can currently add a TV tuner for around £60, or a card reader for about half that, while a DVD-playing box is also said to be in the pipeline.

All this multimedia tomfoolery would be useless without a capable screen. Fortunately, there are no worries on that score. The i700's picture is as clear as we've seen for a long time (save perhaps that of the £1,000 Sony reviewed last month). There's enough in reserve in terms of both brightness

and contrast to cover even the darkest tones, while brighter colours are reproduced vividly and accurately. Admittedly, a 25ms response time won't excite anyone, but we defy anyone to spot any real difference between this panel and a 16ms rival. Only hardcore gamers will find a problem here.

Another potential hazard is the slightly limited viewing angle. This is more than compensated for, though, by the i700's unmatched manoeuvrability. An innovative hinge design enables the display to rotate and tilt to unprecedented levels; it will even point upwards like a coffee table. There's also large scope for height adjustment. It won't pivot for portrait functionality, but we shouldn't be too picky.

The one letdown that we won't defend is the presence of just a single D-SUB connector. A monitor that's as geared towards media use as this one should at least feature a digital input, and perhaps even an S-Video port. Apart from that niggle, though, this is the most attractive, fully featured display that we've seen for many a month. At just £351, it really is an excellent buy.

Russell James

PC Plus ratings

ADI i700

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL ●●●●●●●●●●

INFORMATION

PRICE £575 (£489 ex VAT)
SUPPLIER Computacenter
 01707 63 1000
INFO www.ibm.com/uk
WARRANTY Three years

SPECIFICATIONS

NATIVE RESOLUTION 1,280x1,024dpi
INPUTS DVI-I, D-SUB, audio-in
VIEWING ANGLES 160 degrees
 horizontal and vertical
PIXEL PITCH 0.28mm
RESPONSE TIME 25ms
CONTRAST RATIO 350:1
BRIGHTNESS 250cd/m²
WEIGHT 7.5kg

18.1in LCD MONITOR

IBM ThinkVision L180p



Performance and build quality are impressive, but the IBM lacks good colour rendition.

sheer weight of the beast. It's light compared to a similarly sized CRT, but its 7.5kg makes it a real heavyweight in the LCD market. It's bulky, as well, with a deeper than average screen panel and chunky stand. The

good news is that the base is pretty solid, while allowing for 100cm of height adjustment as well as tilt and swivel. The screen bezel is fairly neat and slim by contrast, and the matte black finish is excellent quality.

Rich blacks and dark greys are notoriously difficult to reproduce on LCD screens, but the IBM handles the darker end of the tonal range well, even though very dark greys do tend to merge into black. The top end of the scale is equally good, with excellent

separation in highlight areas, even with the contrast turned up abnormally high. In our tests, high-frequency test screens with lots of finely detailed patterns were rock-solid, with no trace of video noise. This was the case using both analogue and digital video inputs. The L180p has input sockets for both, making it simple to switch between different video sources using the front panel buttons.

Sadly, colour performance isn't quite so good. Even at the 6500K setting, the picture has a bluish tinge compared to our calibrated monitors, and at the alternative 7200K and 9300K settings, the blue goes into overload. Good colour rendition is difficult to set up, even using the manual colour adjustments, making the IBM a poor choice for digital photo work and other image manipulation. All in all, it's a monitor that's best suited to general-purpose office duties, but at this price, it doesn't do enough to set it apart from the crowd, especially when you consider that you can buy a good 19in screen for less money.

Matthew Richards

PC Plus ratings

IBM THINKVISION L180p

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL ●●●●●●●●●●

INFORMATION

PRICE £664 (£565 ex VAT)
Pro Edition £1,075 (£915 ex VAT)
SUPPLIER Adobe 0870 606 0325
INFO www.adobe.co.uk

REQUIREMENTS

CPU Pentium III or equivalent
RAM 128MB
OS Windows 2000 SP4 or XP SP1

IN A NUTSHELL

This release boasts a generous number of enhancements for a .5 upgrade. Many existing users will be keen to make use of these, although it may be more cost-efficient to opt for the entire Video Collection 2.5 package, which includes updated related titles plus Photoshop CS.

VIDEO EFFECTS

Adobe After Effects 6.5



To fully appreciate the new features found within Adobe's motion graphics software, it's necessary to understand the difference between the Standard and Professional editions. At almost twice the price, the Professional version has a far stronger feature set, but that shouldn't detract from the functionality available to the Standard edition.

It also helps to consider the context of this software within the Adobe Video Collection. With all the titles enjoying a simultaneous half-generational upgrade, some impressive new features and revisions can be found that may tempt serious creatives into considering the more comprehensive Video Collection 2.5 bundle. The Professional Edition includes After Effects Pro 6.5, along with Premiere Pro 1.5, Audition 1.5, Encore DVD 1.5 and Photoshop CS, for an extra £500, making for substantial savings compared with the individual prices.

But what exactly does After Effects do, and what can we expect from the new version? Put simply, the software is to video as Photoshop is to still images, allowing film professionals to create motion graphics, composites and visual effects. It has long been used throughout the industry to create visually innovative results that may be impossible or too expensive to film.

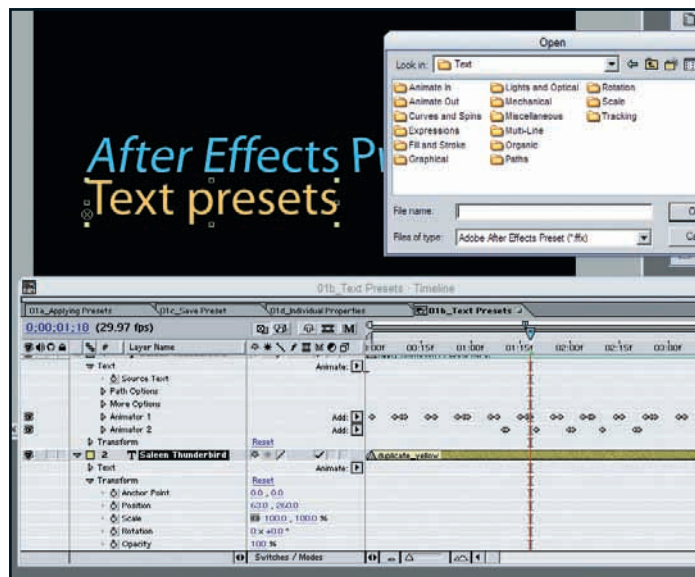
Many of the more impressive new features are restricted to the top end Professional Edition. However, many practical enhancements can be found within the Standard

version, too. One of the most impressive features has been implemented through the advances in the Clone tool. This will be familiar to Photoshop users; it enables you to effectively copy areas of an image across multiple frames and paste them into other frames. This would come in useful for

removing errant boom microphones that have strayed into shot, for example.

For more routine tasks, such as the animation of titles, the introduction of over 250 text animation presets will help you produce quick and easy results. Although these may quickly become rather clichéd, the ability to create and save your own presets will ensure your work retains originality. And there are over 60 new effects; you can easily create smoke and sparks using Particle World, or light transitions using Light Burst or Light Sweep.

Another key addition that shows influences from Photoshop CS is the



More than 250 new text animation presets have been included in After Effects 6.5, enabling you to create complex animations easily at the press of a button.

new colour correction feature. Similar to the way in which the image editor provides quick-fix exposure solutions through the new Shadow/Highlight tool, After Effects can overcome such issues with a range of tools that counter exposure, contrast or levels problems at the press of a button.

In addition to such prominent enhancements to the Standard Edition, there are also core improvements to more practical production features through expanded OpenGL support, as well as a new disk caching system to reduce necessary rendering and the added ability to output directly to a video monitor via FireWire.

Text from Photoshop CS, including text on a path, retains its editability, and Photoshop files saved with 16-bit colour can now be recognised with layers intact. It's possible to select specific sequences when importing work from Premiere Pro 1.5, and to cut and paste between the titles. Encore DVD benefits from tighter integration, as menus can be imported into After Effects to create the kind of results that are impossible to achieve directly within the DVD authoring software.

In addition to the improvements in the Standard Edition, the Professional version includes a number of further features, such as the new Grain Management tools. These enhance the capabilities of the Colour Correction tools by introducing the facility to add,



Text on a path and layer recognition can be imported from Photoshop, demonstrating tight integration across Adobe's products.

remove or match grain from footage to ensure consistency between different media formats. More experienced users will find the comprehensive scripting support offered through the Professional Edition a bonus, as it becomes possible to create automated commands, make global changes to layers and generally speed up more repetitive tasks.

But the most impressive features in the top-end version of the software are its motion tracking enhancements. These formed a key addition to the previous version, but in After Effects 6.5 it's possible to track the scale of an object or limit the tracking to just the horizontal or vertical movement.

If all this is what Adobe considers a .5 upgrade then we can't wait to see what we can expect in version 7.

Chris Schmidt



Motion tracking is the key feature for which you may want to consider upgrading to the Professional Edition.

PC Plus ratings

ADOBE AFTER EFFECTS 6.5

Value ○○○○○○○○

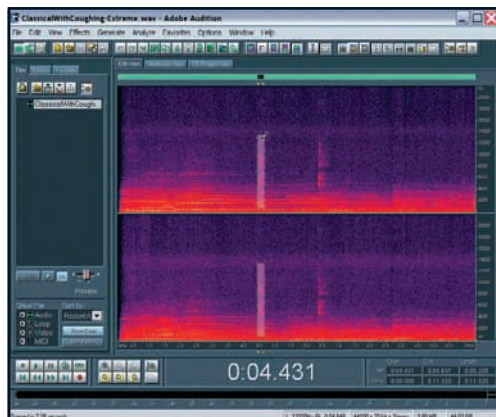
Features ○○○○○○○○

Performance ○○○○○○○○

OVERALL 9

AUDIO EDITOR

Adobe Audition 1.5



Audition doesn't take on the look of the rest of Adobe's video collection

original Syntrillium interface rather than bringing things into line with the familiar Adobe palette approach employed by related titles.

Many of the new features, too, are effectively revised or reworked tools from

the previous version, with such elements as click/pop elimination. Vocal/instrument extraction and automated pitch correction find slightly more intuitive methods of configuration.

However, there are a couple of real enhancements that will have existing users keen to upgrade. Video creatives will appreciate the enhanced Premiere Pro integration. Support through integrated thumbnail support enables audio editors a much better understanding of how a soundtrack should sync to video.

Adobe acquired software developer Synttrillium, specifically to add its audio-editing software, Cool Edit Pro, to Adobe's collection of video editing tools. Not long after the title fell under the Adobe banner, it was re-released with the Audition title, with very little change. But now, we can start to determine the direction that the software giant has in mind for the humble audio editor.

On first impressions, the software retains much of the familiarity of the previous version, holding onto the

The original audio user base includes an impressive Frequency Space Editing feature that will generate some excitement. This is the audio equivalent of Photoshop's Healing Brush, and enables the isolation and effective removal of audio anomalies, such as background coughs from a live recording, by analysing the overall audio frequencies and averaging out any inconsistencies.

Envelope editing is much improved, with the introduction of bezier handles making for smoother curves. Integrated CD burning will improve workflow, as will the ability to preview audio tracks prior to loading. Support for the Propellerheads ReWire sequencer should see more musicians turning to the Adobe package as they integrate their working tools, while the support for VST effects and a wealth of royalty-free sessions and loops will expand the potential enormously with such users' existing software tools.

Audition 1.5 has certainly lived up to the standards expected by both original Cool Edit Pro and Adobe users, and promises some exciting developments for the second generation.

Chris Schmidt

INFORMATION

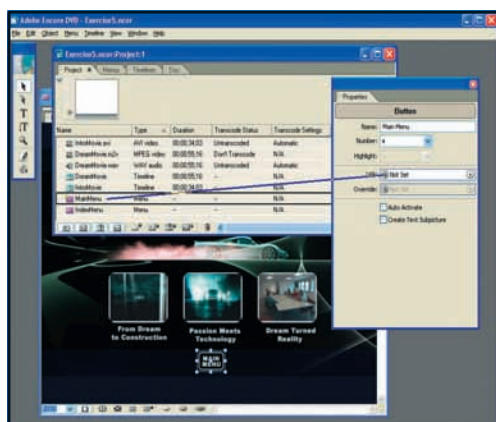
PRICE £246 (£209 ex VAT)
SUPPLIER Adobe 0870 606 0325
INFO www.adobe.co.uk

REQUIREMENTS

CPU 400MHz Pentium or equivalent
RAM 64MB
OS Windows 2000 or XP

DVD AUTHORIZING

Adobe Encore DVD 1.5



Encore DVD is far more detailed than the host of DVD authoring tools that are available now.

existing Adobe titles has been available before. Here, though, the relationship with related Adobe Video Collection titles is strengthened by the option to create chapter points using markers generated by Premiere Pro 1.5.

for example. As for Photoshop, nested layers and non-square pixel content will prove essential when creating menu items and ensuring that designs are rendered.

The introduction of menu guides will make the layout of such elements more reliable. Similarly, the enhanced Library palette sees many features that will also benefit the more creative user. Organising such assets into new Library sets within the enhanced palette enables the grouping of related

DVD is certainly taking over home entertainment, with more and more consumers buying the hardware or making use of their PC or games console to view media-rich entertainment. Despite this, there's still little in the way of professional-level software that can be bought off the shelf to create such entertainment.

However, the exceptions to this rule are a certain Apple application, and Encore. So, what should we expect to find in this Adobe upgrade? Integration with

elements for specific project types.

The new Style palette will enable the application of common graphical elements, such as shadows, bevels or glows, from a central point. Anyone who has experienced Layer Styles within Photoshop will appreciate this.

On the production side, the process is much simplified, with DV preview of menus eliminating the need to burn your DVD project to disc in order to check your designs. The support for background transcoding will further save time, as you continue to develop your work while source files are processed in the background.

The ability to create and save your own workspace is handy, and the ability to work with QuickTime rendered content strengthens the application's potential. Even more welcome is the new Project Checking feature for reviewing the quality of ongoing projects from simple button actions.

With such improvements, it seems that Adobe is intent on establishing its dominance of this emerging media with a range of tools that enable some truly creative results.

Chris Schmidt

INFORMATION

PRICE £452 (£385 ex VAT)
SUPPLIER Adobe 0870 606 0325
INFO www.adobe.co.uk

REQUIREMENTS

CPU 800MHz Pentium III
or equivalent
RAM 256MB
OS Windows XP

PCPlus ratings

3.4GHz PENTIUM 4 NOTEBOOK PC

AJP D870P



Opting for the 'big is beautiful' approach, AJP has based its latest laptop on a giant Clevo 870P chassis with an impressive 17in TFT panel. But 'big' also means heavy, and generally suggests an unbalanced combination of a fantastically-fast processor and a dismal battery life. We've seen such speedy and bulky desktop replacements before, but this is the first to feature ATI's new Mobility Radeon 9700 graphics processor.

The D870P's price tag is high because it brings together the latest laptop technologies into one package. It's built around a 3.4GHz Pentium 4 processor, a far less efficient all-rounder than the Pentium M, but still popular among power users. Alongside it, AJP has included an excellent 80GB Hitachi hard disk and 512MB of main system memory. There's little to complain about as far as raw power is concerned. While Intel has a 3.6GHz chip waiting in the wings, the 3.4GHz P4 delivers some phenomenal performance. The 80GB hard disk may only be a 4,200rpm-rated unit, but it's a good size for a laptop system, especially if you use it for large-scale media storage.

With such a solid base spec, the graphics are suitably eye-catching, and the new ATI Mobility Radeon 9700 GPU posted a lofty 3DMark 2001SE score of 11,482. A second test, using the 2003 edition, gave a rating of 3,279. Compare this to the scores of 10,013 and 2,926 from a similar 9600-based system and you can see that ATI's latest design narrows the performance gap between desktops and notebooks even further.

Technically speaking, the 9700 chipset improves on the talents of the 9600 visual processor thanks to a jump in the clockspeed (this 9700 was running at 405MHz) and a doubling of the VRAM (256MB). According to the spec released by ATI, there appear to be no radical hardware changes from



The AJP D870P's 9700 IGP certainly grabs the headlines here, but it offers only a small performance increase when compared with the existing 9600 chipset.

the existing 9600 architecture; the 9700 is still based on a four-pixel pipeline system with two pixel shaders. Consequently, it's tempting to say that the 9700 is simply a revved-up version of the 9600 chip. ATI claims that it's around 30 per cent faster than its predecessor, but our tests suggest that this performance increase is closer to 15 per cent, so it's not the massive leap in power that you might have been expecting.

MobileMark 2002 tests system performance as the battery discharges, giving us a simulated real-world score. The D870P posted a superb score of 192 after its Li-Ion cell ran for 94 minutes. Laptops often offer greater all-round functionality at the expense of battery life, and the D870P is a case in point. With a power-hungry P4 at its heart, you would require a huge Li-Ion cell to eek more than two hours of life out of it.

The D870P's 17in widescreen LCD is

excellent (but battery-draining), and it's worth noting that while the panel here is limited to a maximum resolution of 1440x900 pixels, the 9700 visual processor is capable of upping the resolution to 1600x1200 on a capable external display. As ever, the chassis determines the expansion options, but there's only room for three USB 2.0 ports, a PCMCIA interface and a FireWire socket. There is, however, a 6-in-1 card reader here alongside a Sony DVD/RW drive, and note the integrated VGA webcam above the LCD. The wired comms – Gigabit Ethernet and 56K modem – sit alongside the new wireless variety, here an 802.11g module.

AJP's 870P system is every inch the desktop replacement, its appeal bolstered by a blisteringly fast CPU, a roomy hard drive and all the connectivity options to rival a much bulkier desktop setup.

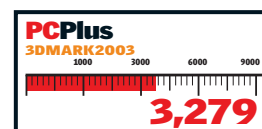
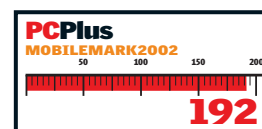
Dean Evans

INFORMATION

PRICE £1,733 (£1,475 ex VAT)
DELIVERY £45 (£38 ex VAT)
SUPPLIER AJP 0208 208 9744
INFO www.ajp.co.uk
WARRANTY Three years

INFORMATION

CPU 3.4GHz Intel Pentium 4
RAM 512MB DDR333
HDD Hitachi 80GB (4,200rpm)
DRIVES Sony DVD+-RW
GRAPHICS 256MB ATI Mobility Radeon 9700
SCREEN 17in widescreen TFT LCD (1,440x900)
SOUND Realtek AC'97
SPEAKERS Quad plus subwoofer
COMMS 802.11b/g, Gigabit Ethernet, 56K modem
PORTS 3x USB 2.0, FireWire, PCMCIA, DVI-I, Parallel, Serial, S-Video, PS/2
OTHER HARDWARE 6-in-1 card reader, BisonCam USB 2.0 camera
OS Microsoft Windows XP Home Edition
OTHER SOFTWARE Ahead Nero, WinDVD 4
SIZE 393x275x38mm
WEIGHT 3.8Kg



PC Plus ratings

AJP D870P

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●

OVERALL 8

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 Or email: info@avcbroadband.com



INFORMATION

PRICE £227 (£194 ex VAT)
SUPPLIER Zen Software
 0845 058 9058
INFO www.zensoftware.co.uk

REQUIREMENTS

CPU 500MHz Pentium III
RAM 512MB
OS Windows 95 or later

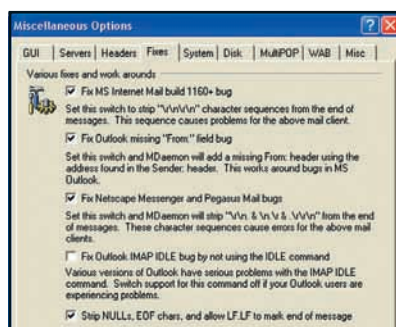
MAIL SERVER

Alt-N MDAemon Pro 7

MDAemon is no stranger to the enterprise mail server arena. We reviewed the previous release just six months ago, and rated it very highly. However, the developer, Alt-N, is always vigilant in making sure the software keeps on improving – standing still is never an option, and this release is no exception.

Luckily though, there are some things that never change. The excellent spam blocking that MDAemon users expect remains intact, with one or two options now enabled by default. The spam prevention in MDAemon is the best out there – it relies on whitelists and blacklists, real-time blackhole lists for dynamic prevention, and even a heuristics algorithm looks like it's a repackaged build of SpamAssassin, the excellent open-source spam-blocker.

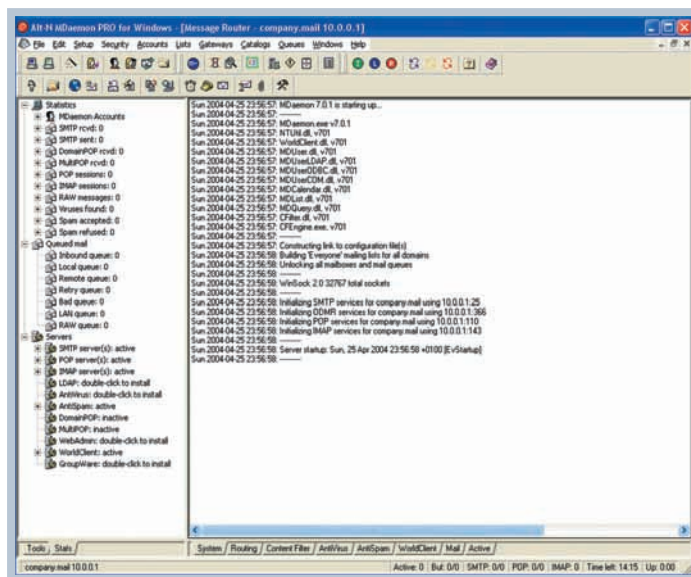
Also largely unchanged is content filtering. If you've used Outlook's Rules Wizard to define how your mail should be sorted, the MDAemon content filter will be second nature to you, in that you define complex rules by putting together smaller ones, such as 'If TO header contains string 'foo' and it has attachments, then mark it as spam'. One clever addition here is a new rule: 'If the message contains a password-protected zip file', which enables you to either strip out attachments from such messages or have them forwarded on to an administrator for checking. This is useful because passwords on zip files change the signature of the contents of the file – a virus piggybacking on an executable will look different if encrypted with the password 'fr0sties' than it will with 'k0rnflak3s'. As a result, it's easy for virus writers to sneak in offending content – send the protected zip along with the password in the email, and the mail server



Quality shines through in the mail server, MDAemon Pro 7. It can automatically work around bugs in mail clients.

won't know the difference. Unless, of course, the recipient's company is smart enough to run MDAemon Pro 7!

There are two big changes in version 7, plus one minor one that's rather annoying. The minor change is the addition of product activation; the vexing little 'feature' introduced in Windows XP has now wormed its way into other apps, including this one. Now obviously we can't speak for Alt-N's usage numbers, but we're pretty sure that the majority of its users are working in corporate environments, on production servers, where piracy is pretty rare. As a result, this is likely to

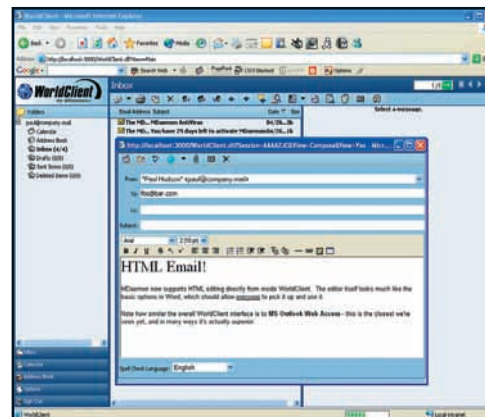


Although there are settings and options left, right and centre, there's one that stands out: Easy mode. This feature hides all but the most essential choices.

only annoy existing users, because few people like to be treated like potential criminals. Having said that, the activation process is at least short – forget about it once it's done.

But on to the big enhancements: the improved WorldClient (MDAemon's web access system) and much improved performance for busy servers. WorldClient has always been a friendly and powerful system, and has improved even further in this release through the addition of full HTML email editing. Again this is implemented through open source – this time the hardy htmlArea tool has been put to use with integration into WorldClient. Although we didn't have the antivirus and groupware plug-ins installed (these are optional extras), there's still more than enough in WorldClient to satisfy even demanding business users.

The improved performance has been achieved by backgrounding many tasks. Previously, the GUI would briefly stop responding during various tasks. In MDAemon 7 the GUI works flawlessly even under heavy loads, and this is down to the new process threading. The secondary bonus to this, is that work is now better distributed across a multiprocessor system, which makes far better use of your existing resources.



The webmail system continues to improve in version 7 of MDAemon, and is a real highlight in the package.

Despite this, version 7 clearly isn't a massive release. Yes, HTML editing is nice, but it's a 10-minute job to copy and paste someone else's code into WorldClient. The new performance is welcome, but again this feels more like the kind of thing you'd expect to see in a service pack. What we would rather see is more integration of modules, such as antivirus bundled by default.

If you don't already use MDAemon 6, we'd strongly recommend that you look at this release as soon as you have the time. If you already run a previous MDAemon release, the choice is more difficult. Do you really need HTML email editing when working remotely? Is your server at 80-90 per cent CPU utilisation? If not, we would advise you to wait for a few months to see what Alt-N brings out next...

Paul Hudson

PCPlus ratings

ALT-N MDAEMON PRO 7

Value ●●●●●●●●

Features ●●●●●●●●

Performance ●●●●●●●●

OVERALL ●●●●●●●● **8**

INFORMATION

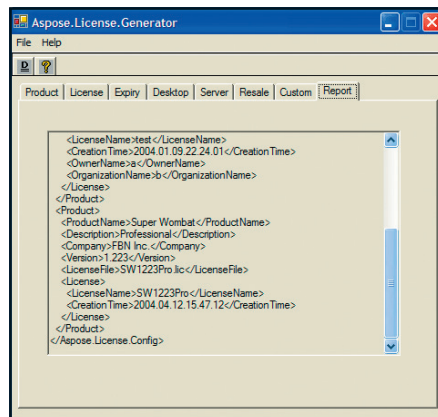
PRICE Free
SUPPLIER www.aspose.com
INFO www.aspose.com

REQUIREMENTS

CPU Pentium or equivalent
RAM 32MB
OS Windows 2000 or later

LICENSING COMPONENT

Aspose.License 1.3



Aspose.License makes it easy to protect .NET applications and components using an encrypted licence-file scheme.

Unfortunately, however, there's the issue of software piracy; how do you protect your components from being incorporated into other people's applications by developers?

Aspose.License provides an effective solution for licensing problems. The .NET framework incorporates some powerful

Although Microsoft pioneered the concept of component-based development with Visual Basic, the idea didn't initially take off, partly because of the difficulty in creating the specialised VBX components used by VB. It was Borland that really popularised component-based development with Delphi and C++ Builder. Times have changed, and in many ways VS.NET is now a much better bet for component developers, especially if you're looking for a decent-sized marketplace for your products.

features for component licensing, but the provided classes and samples are perhaps a little simplistic. For example, if you arrange things so that your component becomes 'licensed' by the presence of a simple, plain text licence file, you're asking for trouble. A better solution is to encrypt the contents of the licence file and store sensitive information in some unused corner of the system registry.

Not only is the use of Aspose.License applicable to component licensing, the software's also capable

of protecting applications from unauthorised usage. Contained inside a small (15KB) assembly, the Licensing class implements a wide variety of licensing checks that can be applied to your licence file.

The licence file contains a number of standard fields, which include Product, Version Number, Company Name, Expiration Date, Owner Name and Organisation Name. You can also add IP addresses, CPU count and similar items to the licence file, and there's provision for adding your own custom fields, too. Each of these fields can be tested at run-time, ensuring, for example, that the Registered Owner field stored in the system registry agrees with the design-time Owner Name in the licence file.

The actual licence file is encrypted using the 'crypto' functionality built into the .NET framework, ensuring a secure system. Assuming that your own assemblies are strong, hackers will find it hard to crack components and applications protected by Aspose.License. This free package also includes a licence-generating program for creating your own licence files.

Dave Jewell

PCPlus ratings

ASPOSE.LICENSE 1.3

Value N/A

Features

Performance

OVERALL 8

INFORMATION

PRICE Free
SUPPLIER Frederico Caldeira
 Knabben fckeditor@fredck.com
INFO www.fredck.com/FCKeditor

REQUIREMENTS

CPU Pentium or equivalent
RAM 32MB
OS Windows 95 or later

HTML TEXT EDITOR

FCKeditor 1.5



This fully-featured HTML editor includes embedded graphics, tables and source code.

usefully, it doesn't require any special installation software. To see the tool in operation, simply head to the manufacturer's site at

Regular users of the eBay online auction system will have noticed that it's recently become easier to add rich text descriptions of the items you're selling. Previously, you had to manually enter the necessary HTML tags, which was rather tedious. But while eBay is moving in the right direction, the text-editing capabilities provided are still relatively crude.

The site designers might do well to take a long, hard look at goodies like FCKeditor – a very sophisticated online HTML editor.

FCKeditor 1.5 is an open-source HTML editor that can easily be embedded in a web page, and

www.fredck.com/FCKeditor and click the link to interact with a live demo.

The editor has a very Microsoft Office feel to it, and shouldn't present any problems for the average end-user. As you can see, a Word-style toolbar is displayed, and can be customised by the developer. Right-click context menus are also provided in key parts of the editor, so you can right-click on an embedded image, on a table or in the main text-editing area – in each case, you'll see an appropriate set of menu options. Some of the edit dialogs even have preview capabilities; if you right-click an image, for instance, you'll see a preview window that

enables you to experiment with different possibilities for the image's Align property.

Much of the core code is in JavaScript, and the ability to run Java on the client side is an important requirement. Multiple languages are supported, with more being incorporated all the time; the editor automatically detects the required language needed by the client. FCKeditor is now integrated with the ieSpell spell-checker from www.iespell.com, too. The first time you try to use the spell-checker, you'll be asked to download and install it.

Other highlights include XHTML support, the ability to do a formatted paste from Word (plain text pasting obviously works, too), and a multi-level undo/redo facility. There's even a pop-up Insert Special Character dialog for when you want to add special characters to a text run. We should also mention that FCKeditor includes a selection of ready-to-insert 'smiley' characters (from the coy to the downright devilish), making the editor great for implementing online forums.

Dave Jewell

PCPlus ratings

FCKEDITOR 1.5

Value N/A

Features

Performance

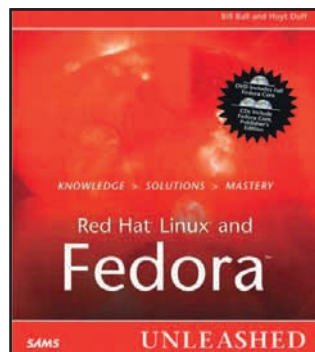
OVERALL 9

LINUX

Red Hat Linux & Fedora Unleashed

PRICE £26 (€22 ex VAT) **ISBN** 0-672-32629-9 **AUTHOR** Bill Ball & Hoyt Duff
SUPPLIER Computer Manuals www.compman.co.uk

For those who complain that books no longer give value for money in the face of unfettered Internet access to knowledge, we offer up the incredible package that is this tome. For your 25 pounds you not only get more than 1,000 pages, covering everything you need to 'plan, install, configure, maintain, administer, rebuild and use' the Fedora Core, but somehow they've managed to include two CD-ROMs with an easy-to-install version of Fedora. And the best is yet to come, because there's also a DVD containing the full Fedora Core distribution, including all the source code and all the extras – this would normally span across six CDs, or require the full use of your broadband pipe for a while. As long as you're at home delving inside an OS, or have some Linux experience, this book won't fly over your head, although beginners should look elsewhere to be honest. However, this isn't a book for the Linux veteran either; if you've already gone down the Red Hat route you won't gain



anything from reading this. This means it has a somewhat limited audience of technically-minded Windows users with some Linux experience. It's well-written, definitive, comprehensive and has all that real code waiting to be installed. With the OpenOffice.org office suite, Apache web server, Samba for Windows-based file and print sharing, plus hundreds of utilities, this one could run and run.

Davey Winder

OVERALL

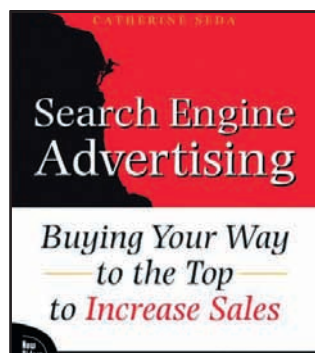
8

STRATEGY

Search Engine Advertising

PRICE £16 (€14 ex VAT) **ISBN** 0-7357-1399-5 **AUTHOR** Catherine Seda
SUPPLIER Computer Manuals www.compman.co.uk

If you're familiar with online search techniques, which of course we all are, there are some books that don't immediately appear to have any obvious appeal: books that make you wonder whether you could gain the same content from a few hours spent with Google. This is one of those titles. It promises to help you buy your way to the top of the search engine rankings, increasing sales from your website as a result. However, you would be as wrong as we were to dismiss this as just another bandwagon-jumper. Forget the gimmicky \$35 credit vouchers inside a CD slip on the back page, and instead focus your attention on the praise given to this book by the likes of such search engine gurus as Danny Sullivan, editor of www.searchenginewatch.com. What author Catherine Seda has done to warrant this praise is bring together all the relevant facts about pay-for-placement schemes, and discard the over-hyped chaff and the outright scams. She details the correct strategies for gaining the maximum



exposure at the lowest cost per customer. But that's where the book does fall short for us, as only a single, 14-page chapter is devoted to one of the most important elements of engine placement, namely web page optimisation. If you get the tech, but haven't grasped the strategic, then this is the book for you. However, if it's the other way around, there are better references by far.

Davey Winder

OVERALL

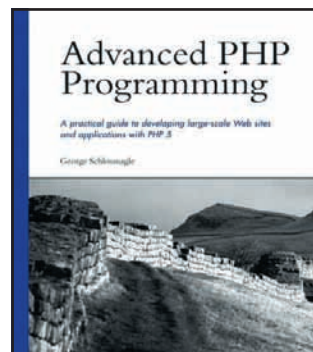
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WEB PROGRAMMING

Advanced PHP Programming

PRICE £26 (€22 ex VAT) **ISBN** 0-672-32561-6 **AUTHOR** George Schlossnagle
SUPPLIER Computer Manuals www.compman.co.uk

PHP 5 is only now coming out of extensive Beta testing (it has Release Code 1 status as we go to press), so it's early days for anyone looking at developing large-scale websites and applications using it. Yet the wonderfully-named Mr Schlossnagle has written a hefty, 650-page practical guide to doing just that. Luckily, with the exception of the sections dealing with the new object-oriented features, and the SOAP coverage, little of the book is actually PHP 5 specific. Instead, it aims to provide solid ideas and strategies to produce faster and better-designed code. With the Netcraft survey (www.netcraft.com) showing more than 15 million domains running on PHP power, there's certainly a big audience, and this is a big book with big ideas and a big scope. Indeed, it's the 'big' in the book that's important, as what Schlossnagle has attempted to tackle is the cynicism of those who say PHP can't scale to enterprise levels. He's determined to prove the cynics wrong, has many years experience



of building large-scale PHP sites (including CommunityConnect, which he helped scale to more than 130 million dynamic PHP requests per day), and we think he's certainly succeeded. If you just want a bog-standard PHP reference to aid you in adding dynamic functionality to a small website, this isn't the book for you, and you would be well advised to browse the plethora of titles already out there for that purpose.

Davey Winder

OVERALL

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WINDOWS

Windows Command-Line

PRICE £15 (€13 ex VAT) **ISBN** 0-7356-2038-5 **AUTHOR** William Stanek
SUPPLIER Computer Manuals www.compman.co.uk

We would have to take issue with the idea of calling this an 'Administrator's Pocket Consultant', unless your pockets are much bigger than ours. Still, when that's the only real complaint against a book, you know you're onto a good thing. And once you notice that the author is William Stanek you have the final confirmation. Stanek is also the author of such definitive works as the Windows 2000 Scripting Bible and Microsoft FrontPage Unleashed, and has truly hit pay dirt once more with this complete guide to using windows command line tools. Drawing on 20 years of hands-on experience in system admin and programming/scripting environments, he pulls you with him behind the pretty GUI, and reveals where the true power of Windows can be found: the command line. OK, that's a bit of an overstatement, and certainly not everyone needs to hack at the CLI to best exploit their Windows installation. However, if you're an administrator type using either Windows XP Professional or



Server 2003, you'll love the depth of detail. Everything from understanding the command shell to using Windows Server 2003 resource kit tools has a direct and productive impact upon your job. If getting to grips with event logging, network printers, command line scripting and gaining real control over your system is important to you, do yourself a favour and buy this deceptively comprehensive book.

Davey Winder

OVERALL

9

INFORMATION

PRICE £586 (£499 ex VAT)
DELIVERY £34 (£29 ex VAT)
SUPPLIER CCL Computers
 01274 47 1266

INFO www.cclcomputers.biz
WARRANTY One year collect and return

SPECIFICATIONS

CPU 1.8GHz AMD Athlon XP 2500+
RAM 512MB DDR333
HDD 160GB Hitachi ATA-100 (7200rpm)
DRIVES 8x NEC DVD±RW, FDD
GRAPHICS 128MB Sapphire Radeon 9600
SCREEN 17in CRT CTX EX700F Plus
SOUND 5.1 ADI AD1980
SPEAKERS Genius SP-Q 2.1 Slim
COMMS 56K modem, 10/100 Ethernet
PORTS 6x USB 2.0, Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, DVI-I, S-Video, Audio-Out, Headphones, Mic
OTHER HARDWARE Microsoft wireless keyboard and mouse
OS Microsoft Windows XP Home
OTHER SOFTWARE Microsoft Works Suite 2004, Panda Titanium Anti-Virus, Nero

ATHLON XP 2500+ DESKTOP PC

CCL AS25-EL



If you're a struggling student living on a loan, or you work in a home office or are starting up a new business, you won't want to spend any more than is absolutely necessary on your PC. However, keeping to a budget of £500 doesn't mean that you have to buy second-hand, or make sacrifices with what your system can do. Take CCL's well-matched PC, monitor and wireless keyboard and mouse, for example. They fit surprisingly well together to make a good-looking system at under £500 ex VAT. The specification is no less interesting, with a fair degree of memory and drive space for the price.

The case design may not suit everybody. It includes a transparent panel in its left-hand side with illuminated blue fans, while there are twin imitation bubble tubes running up either side of the front panel, again coloured blue. We think it looks attractive enough, although the cabling inside could be tidier. However, it's certainly true that the extra fans add considerable noise to the system. The style of the case suggests that you'd want to show it off on the desktop, but the swish of the fans dictates that you're more likely to hide it away where the noise would be less intrusive.

The PC is built on an Asus system board, using an Athlon XP 2500+ processor with a generous 512MB of main memory. Although CCL must have had at least one eye on the budget for this system, fitting this much memory, along with a 160GB Hitachi hard drive, which formats down to 153GB, proves that you can still get excellent value at this price point. In fact, the company has even managed to run to a DVD rewriter for removable storage. A

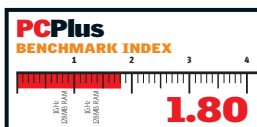
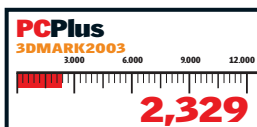
second DVD drive would ease back-ups, but we shouldn't be too picky.

One of the areas in which PC suppliers can traditionally cut a corner is with the sound system, but again that isn't evident here. The 2.1-channel set of Genius speakers, with a neat little sub-bass unit and tall, thin satellite speakers, produces surprisingly good sound. They're certainly up to game effects and soundtracks, and they also make a good attempt at reproducing rock and classical music.

Graphics output comes from a Sapphire Radeon 9600, with a full 128MB of video memory. This drives a 17in, flat-faced CTX monitor. This device



With a very individual look, complete with blue bubble-tubes and illuminated fans, the AS25-EL is certainly a budget computer with its own distinctive style.



The NEC rewritable DVD drive supports +R/RW and -R/RW.

gives a clear, bright picture and is easy on the eye at its default resolution of 1,024 by 768 pixels. While the front of the tube isn't quite flat, it doesn't do a bad job, and this CTX is actually one of the better budget monitors available to system builders.

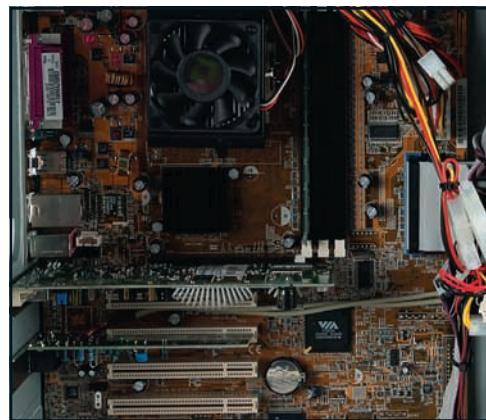
It's worth mentioning the keyboard and mouse too because these are a wireless pair from Microsoft. While the mouse is rather large for those with small hands, the devices are well-engineered and comfortable to use.

Fair speed

We didn't expect anything radical in performance from a system at this price, so we weren't disappointed with what we measured. A PC Plus Index of 1.8 may not set the world on fire, but it's still enough to suggest a strong performance for most applications.

The 3DMark 2001SE index of 7905 from the Radeon 9600 card shows a fair amount of 3D clout, although it may struggle with some of the latest games. This view is strengthened by the 3DMark 03 result of 2,329, which again lies in the middle of the field for 3D performance.

In use, the system works well and with very little hesitation, even when performing quite complex tasks. The keyboard and mouse are easy to use



You can see through the viewing panel to the Athlon 2500+, 512MB of memory and a Radeon 9600 graphics card.

and there are plenty of USB 2.0 sockets for connecting peripherals.

CCL provides a one-year collect and return warranty, which means you don't have to fund the cost of returning the system to the company if it hits problems in its first year. However, even at this low price, we'd like to see two years of cover – you'd expect longer than a year's cover on a £500 TV.

As a final pleasant surprise, the company includes a copy of Works Suite 2004, Microsoft's budget suite, which includes a full copy of Word, plus extras like AutoRoute and Money.

All in all, CCL has produced an excellent system that looks good and performs well for the price, while nice touches like the sound and wireless mouse raise the AS25-EL above most of its rivals in the sub-£500 arena.

Simon Williams

PC Plus ratings

CCL AS25-EL

Value ●●●●●●●●●● 10

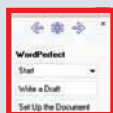
Features ●●●●●●●●●● 10

Performance ●●●●●●●●●● 10

OVERALL ●●●●●●●●●● 8

Corel WordPerfect Office 12 in close-up

WordPerfect Expert
The WordPerfect Expert offers a quick way into many everyday tasks, like Word's Task Pane



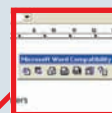
FastFont tool
This previews font changes on-the-fly so you don't have to adopt and subsequently reject them



File compatibility
WordPerfect 12 trades on its ability to transparently import and export Word and other file formats



Word compatibility
The Word compatibility bar enables direct conversion to Word, PDF and XML formats



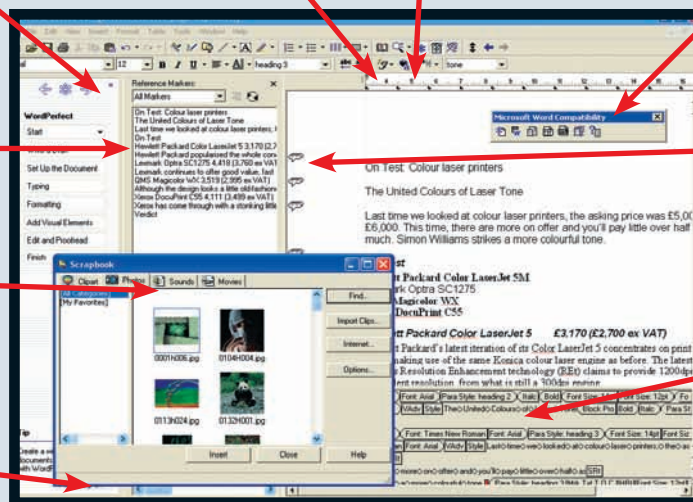
Document layout
Setting markers for index and tables of contents make organising long documents easier



Scrapbook
The Scrapbook is a quick way to preview and insert all manner of graphic and sound media



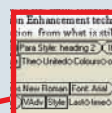
Quick symbols
A button in the formatting bar gives access to commonly-used symbols, such as © and ©



Shortcut icons
Icons in the margins of WordPerfect documents act as shortcuts to style and tabulation changes



Cracking the codes
A longstanding tool within WordPerfect reveals the formatting codes inserted in any document



INFORMATION

PRICE £276 (£235 ex VAT)

Upgrade: £135 (£115 ex VAT)

SUPPLIER Corel 0162 858 9800

INFO www.corel.co.uk

REQUIREMENTS

CPU 166MHz Pentium III or equivalent

RAM 128MB

OS Windows 98SE or later

OFFICE SUITE

Corel WordPerfect Office 12

Corel is in something of a quandry. It can no longer rely on WordPerfect's user base continuing to grow, but still needs to improve and develop the suite in its own right. It has to attract people who would like Microsoft Office, but for whatever reason – usually cost – can't bring themselves to buy it. So, its main claim to sales must be a high level of compatibility with the market leader. However, if it can't do things better than Microsoft, people are more likely to turn to Works Suite than WordPerfect, as that product includes a full copy of Word. Corel must provide enough incentive to attract Office users to its own product.

WordPerfect

WordPerfect has always been a heavyweight word processor, meaning that, as well as handling the day-to-day documentation required in an office, it can manage the specialist requirements of people producing legal pleadings, long manuscripts or academic texts.

WordPerfect's new PerfectExpert is like a cross between Word's Task Pane and the project managers in photo editors such as Corel's own Photobook. It provides step-by-step guidance to document formatting and breaks down complex layouts, such as the title page of a report or brochure, into their component parts. It does make it easier to deal with individual components of a layout, but more experienced users may find that it gets in the way.

Office Ready is claimed to be a one-stop-shop for all document templates. It's certainly a perfectly competent browser for WordPerfect, Quattro Pro and Presentations templates, but it runs as a separate program and, as far as we can see, has no integration with the main application – it isn't mentioned in WordPerfect Help, and doesn't load by default when you install the main suite. You need to install it separately from the extras CD. Start a document from a template in WordPerfect and you see a completely different template browser.

WordPerfect 12 can produce a wide range of different files. Previous versions could export to HTML and XML for web and database use, and the new version adds PDF to the list. The program doesn't use Acrobat Distiller, but has its own built-in file converter, which makes it easy to create graphic-rich documents suitable for reading from the web or straight off-disk.

Although not a new feature, Corel is drawing attention again to WordPerfect's Reveal Codes tool, which calls up a separate pane at the bottom of the editing window showing the control codes entered into your text to achieve specific effects. WordPerfect has always been able to do this, but it does give you much more precise control over document layout than using the standard Windows interface does.

Fitting in with the extra emphasis on compatibility with Word, the Workspace Manager, which pops up each time

you run the word processor, gives you easy access to WordPerfect's Word lookalike mode. This mimics the position of buttons and menus on the toolbars but, probably for copyright reasons, still uses WordPerfect icons on the buttons.

There are a few other refinements, like the ability to access the contents of your Outlook address book from within the word processor (how many people run Outlook – not Outlook Express – without the rest of Office?), but overall the improvements are limited.

Quattro Pro

Quattro Pro has always been a heavyweight spreadsheet, in the same league as Excel and formerly Lotus 1-2-3. It has much greater capacity than either of these, and can support large worksheets with over one million rows. It's hard to think of many tasks that would need this much room, but still.

Quattro Pro 11 does everything earlier versions did, but doesn't add a lot to the mix. It has the same Workspace Manager as WordPerfect, although here Quattro imitates the interfaces of Excel and 1-2-3, rather than Word, but it's only the interface that's new, not its ability to mimic other applications. You can publish a worksheet to PDF or XML, as well as directly to an Excel document. This is again useful when producing work for wide distribution, but is hardly a major upgrade.

More interesting is the program's ability to produce Cross Tab Reports.

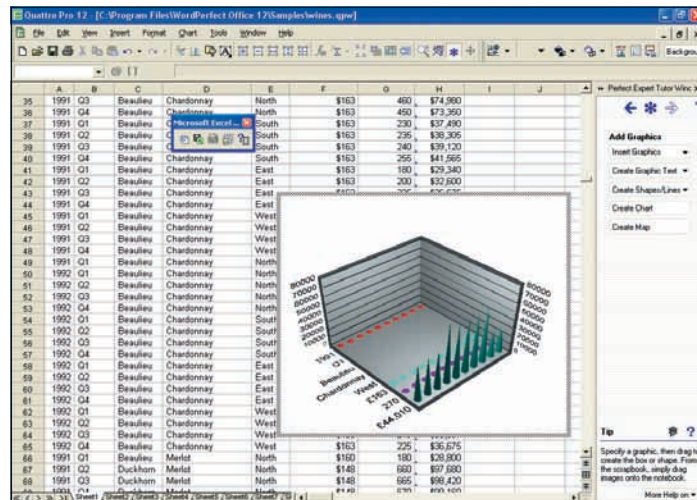
Similar in function to Excel's Pivot Tables, Cross Tab Reports let you build your own specialist reports by selecting rows, columns or individual cells, and pulling them together into a custom-made, continuously-updated worksheet with just the information you need. You can build a report across several worksheets, and include information from OLAP databases, as well as other Quattro Pro worksheets.

As with WordPerfect, but of more use here, you can graph any area of a worksheet, choosing the cells to include and defining the type of display. You can go further than simple bar or pie-charts, or even 3D versions of these. Corel has built some of the facilities of CorelDraw into the charting module of the program, so you can reproduce rendered objects as the columns or points within your charts, and exaggerate perspective for a more professional-looking visual. Overall, Quattro Pro shows a series of useful refinements, but nothing particularly ground-breaking.

Presentations

Presentations is Corel's rival to PowerPoint. Like WordPerfect and Quattro Pro it's strong on compatibility, and can read and write PowerPoint files directly. It can also mimic the layout of controls in PowerPoint or stick to its own, in some ways more logical, interface design.

Corel makes two main claims for improvements to the Presentation's feature set in version 11: HTML publishing and Show on the Go. When you've created a presentation using Presentations, you can publish it straight to HTML using the button on the new Compatibility Bar. This is ideal for posting presentations on the web



INFORMATION

PRICE £1,410 (£1,200 ex VAT)
SUPPLIER DataCore 0118 949 7024
INFO www.datacore.com

REQUIREMENTS

CPU 300MHz Pentium
RAM 512MB
OS Windows 2000, XP, 2003

NETWORK STORAGE SERVER

DataCore SANmelody

Targeting small to medium businesses with a network storage crisis, DataCore's SANmelody offers a smart solution for delivering on-demand capacity at an affordable price. Fibre-channel Storage Area Networks (SANs) and Internet SCSI (iSCSI) hard disk arrays have been well out of the reach of SMEs, but SANmelody provides a software solution which enables you to take a standard Windows server and turn it into a network storage resource, using either of these technologies.

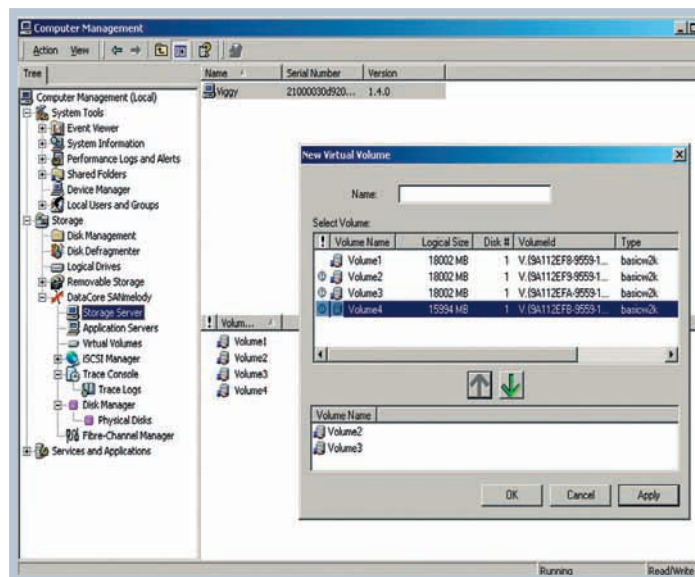
We decided to focus on the iSCSI side of SANmelody, as smaller companies are less likely to have a fibre-channel SAN in place. iSCSI runs over your existing Ethernet cabling infrastructure. Systems wanting to access the SANmelody storage server can use the downloadable Microsoft iSCSI initiator software. However, both iSCSI and fibre-channel are supported with different product options, and can be mixed and matched as required.

Minimum hardware requirements are reasonable, and SANmelody supports a wide range of Windows platforms. Network storage options are endless – it can use any internal or external hard disk that can be accessed from Windows. The system's boot drive shouldn't be used by SANmelody; any drives you plan to make available as network resources need to be made ready from the Disk Administrator, but should be basic disks that haven't been

formatted or given a drive letter. You need to decide how you want your network storage to be distributed, as each physical disk can be split up into partitions, which can be accessed simultaneously by multiple systems.

As an MMC (Microsoft Management Console) snap-in, SANmelody is accessed directly from the Computer Management interface. Installation only takes a few minutes, during which time it loads new iSCSI target drivers for each active network adaptor it finds. It also loads its own drivers for any fibre-channel HBAs resident in the server. Each system that is to access the network disks is called an application server, and you need to go to each one and log its iSCSI initiator in to the storage server so that it sees and displays available channels.

Next, you create objects for each application server. Use good initiator naming conventions, as the name of

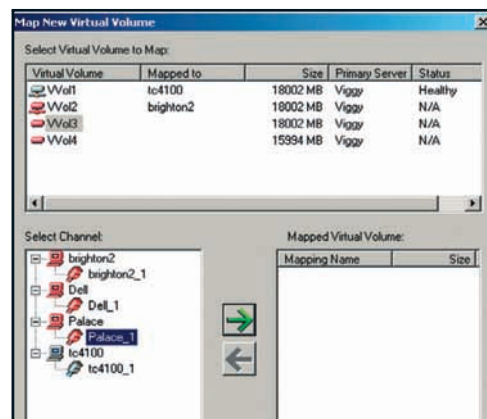


Virtual volumes can be shared among multiple servers. As an MMC snap-in, DataCore SANmelody is very accessible and easy to manage.

each application server declared to SANmelody has no physical reference to the server in question. You then need to browse the list of identified initiator channels and assign them to the appropriate application server objects. Each prepared disk partition is declared as a virtual volume which needs to be mapped to selected application servers, and these can be dedicated or shared amongst multiple servers.

We did find it annoying during initial installation to see the SANmelody iSCSI drivers showing up as unavailable after a reboot. Each time this happened we had to reinstall them and restart, because without these, SANmelody won't create any iSCSI channels. However, once resolved we were able to go to each application server and log on to the new target disks. In typical iSCSI fashion these appeared to each server simply as a new local hard disk, which could be formatted from the Disk Administrator. All SANmelody virtual volumes can be protected from modification with a single mouse click, and have to be released from its control if changes need to be made.

Along with our test server, we used four Pentium III and dual Xeon-based Windows systems connected over Gigabit Ethernet. The open-source

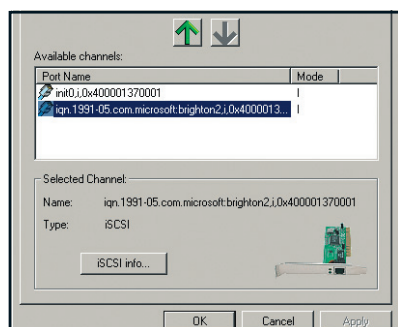


Once virtual volumes have been declared they can be mapped to application servers. They appear as local hard disks.

lometer reported impressive results for raw throughput, with 100 per cent sequential reads delivering an average of 27MB/sec and all four servers accessing the same remote volume on the storage server. This increased when each was accessing four dedicated 18GB volumes, with lometer returning an average of 45MB/sec for each server for a cumulative total of 180MB/sec. However, you won't want to run any other applications on the storage server, as these tests all produced close to 100 per cent processor utilisation.

Apart from a few installation glitches, this is a classy network storage solution, delivering iSCSI and fibre-channel services without the need for expensive hardware. In terms of performance, it's on a par with the few iSCSI disk arrays currently available.

Dave Mitchell



Good initiator naming conventions help when it comes to assigning iSCSI channels to the correct application servers.

PCPlus ratings

DATACORE SANMELODY

Value: 5/5

Features: 5/5

Performance: 5/5

OVERALL: 5/5

INFORMATION

PRICE £1,506 (£1,282 ex VAT)**SUPPLIER** Dell 0870 907 4155**INFO** www.dell.co.uk**WARRANTY** Three years on-site, next business day

SPECIFICATIONS

MOTHERBOARD Dell**CHIPSET** Intel E7210**CPU** Intel Pentium 4 2.8GHz**RAM** 1GB PC3200 ECC SDRAM**HDD** 2x 80GB Seagate

Barracuda SATA

HDD CONTROLLERS Dual SATA,

1x IDE Dell CERC 1.5/6ch PCI SATA

RAID controller

NETWORK Embedded Intel

PRO/1000 CT Gigabit Ethernet

OTHER Dell DRAC III/XT remote management PCI card

SMALL BUSINESS SERVER

Dell PowerEdge 700

Now that Serial ATA (SATA) is fast becoming the storage interface of choice at the SMB level, Dell is embracing this technology with a vengeance. Targeting small businesses and remote branches or offices, the latest PowerEdge 700 brings plenty of SATA storage into play, but adds some impressive expansion options.

Management tools are also good – you don't normally expect to see such sophistication at this level. For the latter, Dell bundles its complete OpenManage software suite, which is made up from its Server Administrator, IT Assistant and Array Manager utilities. Installation is simple enough – you can choose to install the components for a server that is to be managed, or those that will turn a system into a management server. Local management is handled by the browser-based Server Administrator, which offers plenty of tools for monitoring the myriad motherboard sensors. You can keep an eye on processors, memory and hard disks, and modify the server's BIOS or download new firmware. For power, temperatures, voltages and fan speeds, each value is shown as a vertical bar graph. Setting individual thresholds

enables these to be used with an alerting system, so warnings can be linked to network broadcasts, running an application and sending emails.

The IT Assistant is aimed at Dell-centric networks, as it's designed to remotely monitor and manage all manner of Dell systems that have the relevant agent software installed. It scans the network and builds a list of discovered systems. You can run basic inventories on selected systems, shut them down, wake up WoL (Wake on LAN) compliant systems and flash their BIOS. It offers many features found in Server

Administrator. You can remotely monitor critical components and link problems with alerts.

Dell also included its latest DRAC III/XT remote management card in the review system, which enables the system to be accessed and controlled over the network or via a modem connected to its serial port irrespective of its condition. Performance isn't great, but we were able to connect to the server over a secure browser session, view the card's properties and monitor vital statistics. All information provided by the local utility is available here and you can select up to eight sensors and



Dell's choice of storage interface, impressive expansion options and fully featured management tools are rarely seen at this price point – a boon for the small business.



Legacy connections are still provided alongside a wealth of modern options.

view them all in real time from the same window. Power controls are particularly good as you can take full remote control and reboot the server, recycle power, shut it down or power it up. Physically, the 700 is very well built, and removing the side panel reveals a tidy interior with plenty of access to key components. A single 2.8GHz Pentium 4 processor sits near the top of the Dell motherboard, and is surmounted by one of the tallest passive heatsinks we've yet seen. The price includes a decent 1GB of fast PC3200 memory, and the resident Intel E7210 chipset supports up to 4GB. As with HP's ProLiant ML110 we found noise levels low enough to enable this system to sit unobtrusively on the desktop.

Storage is well catered for with a pair of 80GB Seagate SATA drives, and the hard disk cage has room for two more. The motherboard offers a pair of embedded SATA interfaces, but RAID is on the menu in the shape of Dell's CERC six-channel PCI controller card. The two drives came configured as a RAID-1 mirrored array. A nice touch is the extra SATA, and power cables are already installed ready to receive the two extra drives. Even the RAID controller gets its own management utility, which runs as an MMC (Microsoft



It doesn't take much to add a touch of flair to a server, and Dell's touch is classy.

Management Console) snap-in. From the Array Manager's tidy interface you can view the controller, and physical and logical drives, check on free space and use the Windows Disk Administrator. Alerting is limited to the NT Event Log, but you can tie storage related errors and events into the Server Administrator.

Although the extra RAID and remote management options put the asking price into four figures, the 700 does represent good value. If you're not worried about server management, products such as the lower cost but well-built ProLiant ML110 from HP will suffice. But if you want the benefits of SATA plus good storage fault tolerance, room to expand and, of course, full remote management, then the PowerEdge 700 is a worthy candidate.

Dave Mitchell

PCPlus ratings

DELL POWEREDGE 700

Value ●●●●●●●●●●

Features ●●●●●●●●●●

Performance ●●●●●●●●●●

OVERALL 8

3D MODELLING

Eovia Amapi Pro 7.1

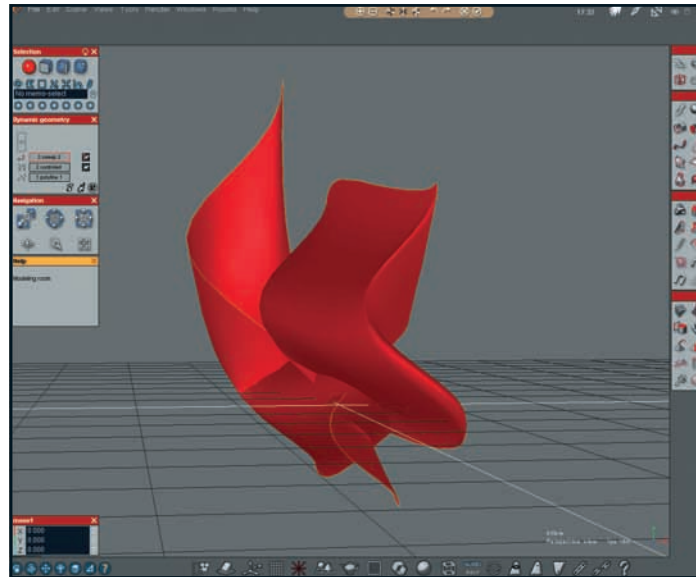
Some years ago, NURBS – Non-Uniform Rational B-Splines – formed one of the main technologies that separated professional 3D graphics applications from hobbyist software. This method enables you to control curves with simple polygonal frames, and brings more realistic, organic forms. Now, even some lower-end software has NURBS systems built in, but designing 3D objects with NURBS isn't child's play, and this is where Amapi comes in.

Amapi can model using simple polygons as well, but its focus is NURBS geometry. It has texturing and rendering engines, but they're minimal, and it's missing animation capabilities. However, focusing on a specific area in 3D can be a very powerful thing, reducing complexity and code weight.

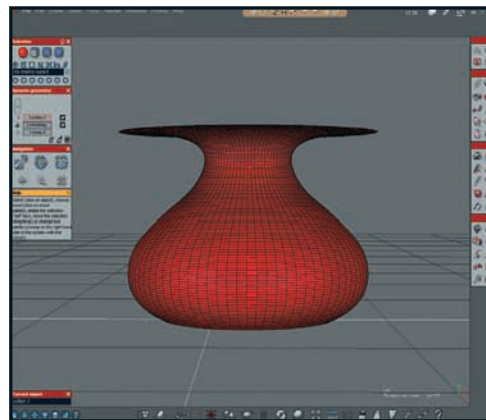
Like any 3D application, Amapi has a scary interface. It was originally a Mac application, so it's understandable that Eovia has chosen to eschew the Windows standard. Even though the regular Windows buttons are in the same place, they have different icons. Once you've got past that, Amapi isn't so hard to understand compared to some of the other applications in the field, especially once you've watched the extensive tutorial videos.

Modelling tools are arranged along the right-hand side of the interface, with various modelling environment settings along the bottom. You get preset views for working with one, three or four viewpoints. Amapi's modelling capabilities are extensive. You can start off with primitives such as a cube or a sphere. A height field can be created from an image too, which is great for modelling irregular landscapes from a simple gradient bitmap. Alternatively, you can start from scratch, using the drawing tools to trace boxes, circles, polylines and curves, which can then be used to extrude or sweep 3D forms.

Once you've created your basic shapes, Amapi offers tools to facet, sweep, create ruled surfaces or use a network of curves to create a surface. These are easy to use and highly interactive. Amapi's powerful dynamic geometry system keeps track of the various operations that were used to make up an object, so you can step up and down levels to fine-tune your shapes, either at the bounding line level or for individual polygons. This is an ability that's unparalleled in 3D apps at this price point. Also, Amapi can now create a manifold volume from interlinking NURBS surfaces, which is a great new way of putting together 3D



Amapi's NURBS modelling system is capable of creating extremely complex, curved forms, yet it remains responsive and fully interactive while you're modelling.



Creating a geometric form, like this vase, takes a matter of seconds in Amapi.

hulls, and once the basic objects are in place, there are tools to work on the underlying geometry. Shapes can be smoothed by increasing the polygon count, there's a Chamfer for cutting bevels, and the Thickness/Offset tool offers a quick route for turning curved lines into tubes, among other things.

When working at the polygonal level, there are tools for deleting, tessellating and bending surfaces, and softening bumps. You can also deform an object using a grid box or a predefined operator.

Amapi has a full complement of addition and subtraction operations. You can cut, punch, extract faces and perform Boolean operators, and the latter even extends to NURBS models. This allows NURBS to be embossed, imprinted or grafted. It's also possible to build up objects in layers. Once your

models are complete, Amapi has a built-in renderer for outputting bitmaps, but it's pretty basic. You can add simple shaded textures, a bit of lighting, a bitmap or a colour background and you can turn on shadows and fog, but that's about it. However, Amapi's ability to export objects to other applications is quite

strong, and includes OBJ, STL, DXF, 3DS, VRML and EPS file formats, all of which benefit from Eovia's 'crack-free' tessellation technology to prevent broken geometry. A bundled plug-in enables Amapi's native A3D files to be imported into Eovia's fully-featured 3D modelling and animation app, Carrara Studio 3. It also has IGES and DWG import and export for use with CAD and manufacturing design systems. It can import most of these file formats too.

Amapi Pro 7.1 concentrates on a very specific task – 3D modelling – and is best used in tandem with other rendering and animation software. Still, it's very strong in this area, and it's capable of speedy modelling. It's a bit expensive considering you have to add a rendering and animation tool on top, but its dynamic geometry and NURBS toolset give it a unique power.

James Morris

INFORMATION

PRICE £539 (£459 ex VAT)

SUPPLIER Eovia 01483 79 7498

INFO www.eovia.com

REQUIREMENTS

CPU 800MHz Pentium III

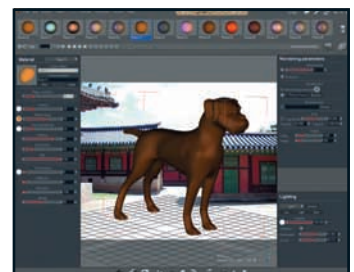
or equivalent

RAM 256MB

OS Windows 98 or later

IN A NUTSHELL

Amapi is an exceedingly powerful modelling tool, but its lack of sophisticated rendering or any animation abilities mean that it will be best used alongside other software. As a result, it's a little overpriced, but it's still a very good application for modelling.



The rendering environment is rather limited and animation tools are completely absent.

PCPlus ratings

EOVIA AMAPI PRO 7.1

Value ○○○○○○●○○○

Features ○○○○○○○○●○

Performance ○○○○○○○○●○

OVERALL 7

ATHLON 64 3400+ DESKTOP PC

Evesham Axis 64 Force

The latest steed to gallop out of the Evesham stables is more than just another well-priced performance thoroughbred – it's the first outing for Nvidia's brand new NForce3 250Gb chipset. This is the much-anticipated update of the original NForce3 150 chipset, boasting an even more impressive feature list, but more importantly, it sees AMD's launch partner finally catch up with VIA in the raw performance stakes.

The big disappointment with the original NForce3 150 chipset was that the pivotal HyperTransport link, which provides an interface to the rest of the system, was limited to an 8-bit upstream link running at 600MHz. The NForce3 250Gb corrects this issue by supporting the originally-intended 16-bit wide HyperTransport link running at 800MHz for upstream and downstream data flow.

Not content with simply catching up with its main rival, Nvidia has also brought gigabit Ethernet to the party, as well as Serial ATA, RAID and impressive eight-channel sound. It's actually the first manufacturer to incorporate an integrated gigabit Ethernet controller in the Northbridge, and the reduced latency this configuration offers gives this chipset a definite edge over the competition. Even more impressively, this controller also boasts a built-in firewall, complete with web-browser interface for controlling the level of security that you wish to employ – ideal for ADSL users.

Of course, such features count for nought unless the performance of this chipset is at least a match for VIA's offering. The good news for Nvidia is that the NForce3 250 can hold its head high. Evesham has installed an Athlon 64 3400+ in the MSI K8 Neo Platinum motherboard that's home to this new chipset to produce some impressive results for the price. The SYSmark2002 index of 320, for instance, is even better than Evesham's top-of-the-range Axis 64 3400+ XL, which costs £800 more.

Moving in

Each Evesham machine that makes it into the PC Plus labs carries the baggage of high expectations on the build front, but the Axis 64 Force doesn't disappoint here. Pop the side of the case open and you're presented with the machine's almost clinical innards. Everything is laid out nicely, and there's plenty of room around the main components.

A 160GB Western Digital hard drive sits alone in the bottom drive bay, with its bright orange Serial ATA connector clamped to the floor of the case. As S-ATA cables have been known to work



Not all new technology need cost a fortune, as Evesham proves with the first outing for NVIDIA's new Athlon 64 chipset, the NForce3 250Gb.



The all-Sony optical drive provision is as good as you'll find anywhere, with an 8x DVD±RW and a 16x DVD-ROM on hand.

loose if not secured properly, this is a nice touch, and shows that Evesham knows what it's doing when building a system. Above the removable hard drive bay you'll find an abundance of slots for both internal and external devices, with only the top two drive bays being occupied. Of these devices, Sony's multi-format DVD±RW drive is the obvious highlight.

The Axis 64 Force ships with 512MB of DDR400 memory as standard, which should be sufficient for most uses, although the fact that the motherboard only boasts three slots does make increasing the memory count to 1GB somewhat tricky. This is only a single memory channel platform, though, so you don't have to upgrade in pairs to get the most from the system.

A memory throughput of 2,957MB/s is reasonable, although we've seen better

results from more expensive memory configurations. The new NForce3 250 chipset doesn't have any effect on this throughput, as the memory controller is integrated into the Athlon 64 CPU.

To shave a few pounds off the price, Evesham has installed a Radeon 9800 Pro instead of the current

powerhouse that's the 9800XT (although even this will soon be eclipsed by the next generation of cards). The Radeon 9800 Pro is still a powerful solution, and should handle anything you throw at it. The 3DMark2003 score is just shy of the 6,000 mark, which equates to frame rates well over 30fps in the three DirectX 9 tests. 3DMark2001SE is

obviously nearing the end of its useful life, as shown by the result of 20,206, with well over 100fps even in the high quality tests. An Aquamark3 result of 43,964 also shows that this machine isn't lacking in this department.

As an advert for Nvidia's new chipset, the Axis 64 Force scores well, packing a serious punch in the performance stakes while making good use of the features present. As a machine in its own right, there's a



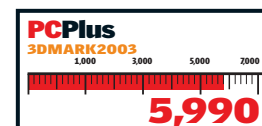
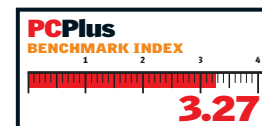
MSI's motherboard is a halfway house between the ATX and BTX standards, with the memory slots a sign of things to come.

INFORMATION

PRICE £1,299 (£1,105 ex VAT)
DELIVERY £20 (£17 ex VAT)
SUPPLIER Evesham 0870 160 9500
INFO www.evesham.com
WARRANTY Two years on-site, one year back-to-base

SPECIFICATIONS

CPU 2.2GHz AMD Athlon 64 3400+
RAM 512MB DDR400
CORE LOGIC Nvidia NForce3 250Gb
HDD 160GB Western Digital S-ATA
DRIVES Sony 8x DVD±RW, Sony 16x DVD-ROM
GRAPHICS 128MB ATI Radeon 9800 Pro
SCREEN 17in Philips LCD
SOUND On-board NForce3 71
SPEAKERS 71 Creative Labs Inspire T7700
COMMS 56K modem, 10/100 Ethernet
PORTS 6x USB 2.0, FireWire, Serial, Parallel, PS/2 Keyboard/Mouse, VGA-Out, S-Video, DVI-I, 2x S/PDIF Out, Mic, Headphone
OTHER HARDWARE Microsoft Windows mouse keyboard
OS Windows XP Home Edition
OTHER SOFTWARE Microsoft Works Suite 7



PC Plus ratings

EVESHAM AXIS 64 FORCE

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	8

EXTERNAL STORAGE

Freecom FHD-XS



The FHD-XS's single USB 2.0 connection folds out from the main casing.

is still noteworthy.

The FHD-XS comes with a single USB 2.0 connection, which folds out from underneath the main casing, meaning that it's well-protected during transit. The added bulk of the

drive compared to a thumb drive does mean that it hangs rather awkwardly from any USB port that's more than a couple of inches off the ground. Thankfully, this is helped somewhat by the fact that the connector can be extended slightly by a simple tug. As you would expect these days, installation is a simple plug-and-play procedure, so long as you're running Windows 2000 or XP.

With a 4,200rpm rotation speed backed by USB 2.0's 480Mbps maximum transfer rate, the FHD-XS's

performance figures were always going to be tidy enough. It's no surprise, therefore, that HD Tach measured a random access time of 25.3ms and a 12.7mbps average read speed. These figures may look unhealthy next to those produced by most internal hard drives, but they stand up well in comparison with all but the fastest external offerings. We should also point out that you're unlikely to find too much discrepancy between portable drives in real-life situations unless you're copying huge chunks of data.

Calculating the value of such a device is tricky. When you consider that you can now buy a 200GB external drive for around £200, one-tenth of that storage capacity for £133 seems a little on the stingy side. However, you always have to pay extra for portability – a 1GB USB thumb drive is likely to set you back around £300. We prefer to compare like with like, and the FHD-XS has an almost identical price to LaCie's 20GB Data Bank, which is probably the closest thing we've seen. This suggests that it offers pretty good value for money.

Russell James

INFORMATION

PRICE £133 (£113 ex VAT)
SUPPLIER Micro Direct
 0870 444 4456
INFO www.freecom.com
WARRANTY Two years

SPECIFICATIONS

CAPACITY 20GB
INTERFACE USB 2.0
ROTATIONAL SPEED 4,200rpm
BUFFER 1MB
SIZE 85x85x12mm
WEIGHT 150g

Like many things in computing, hard drives are continually getting smaller and smaller. We've seen a number of diminutive devices from the likes of LaCie and Toshiba recently, but even so, this offering from Freecom is quite remarkable. With a total volume of just under 87cm³, this is the smallest external drive we've ever seen. Admittedly it's nowhere near as tiny as flash memory products such as USB thumb drives, but this is a platter-based device, so the fact that it slides easily into any pocket

PCPlus ratings

FREECOM FHD-XS

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	8

EXTERNAL STORAGE

Western Digital Media Center



The Media Center is said to have an eight-in-one card reader, but we beg to differ.

Memory Stick and Memory Stick Pro as different, and the identically-sized SD and MMC cards as entirely separate flavours. That's all true technically, but we still think this is a case of two plus two equalling eight.

At least there's nothing that can be misconstrued about the Media Center's primary function, as a 250GB external hard drive. Built-in FireWire and USB 2.0 interfaces mean that it's versatile, connectivity-wise. As well as boasting a sedately-styled silver and charcoal design, it's one of the fastest external drives we've seen, being based on one of WD's excellent Caviar HDDs. The inclusion of a front-mounted power-off button is a mercy, considering how many externals need to be turned off

at the wall before they'll stop sucking up the juice. As is to be expected from a quarter-of-a-terabyte drive, it can't be called portable – it may be driverless, but it's too swollen and heavy to be easily shifted from home to work. Still, it does look rather nice on a desktop.

The big selling point, though, is that built-in card reader and an on-board USB 2.0 hub, although two ports isn't exactly over-generous. Irritatingly, if understandably, the card reader and hub don't function if you've connected the drive via FireWire, so if you want the fastest transfer times and the bonuses, you'll have to use both FireWire and USB 2.0.

Another niggling factor is that, despite two back-up buttons on the front of the drive, there's no facility to automatically transfer data from whatever memory cards you have plugged in to the hard drive. It must be connected to a powered PC, with the supplied software configured. A timed auto backup is relatively useful, but some sort of standalone functionality would have made an outlay of over £200 much more worthwhile.

Alec Meer

INFORMATION

PRICE £226 (£193 ex VAT)
SUPPLIER www.ebuyer.com
 0870 467 0753
INFO www.wdc.com
WARRANTY One year

SPECIFICATIONS

CAPACITY 250GB
INTERFACE USB 2.0/FireWire
ROTATIONAL SPEED 7200 RPM
BUFFER 8MB
SIZE 44.2x218.75x154.43mm
WEIGHT 1.5kg

PCPlus ratings

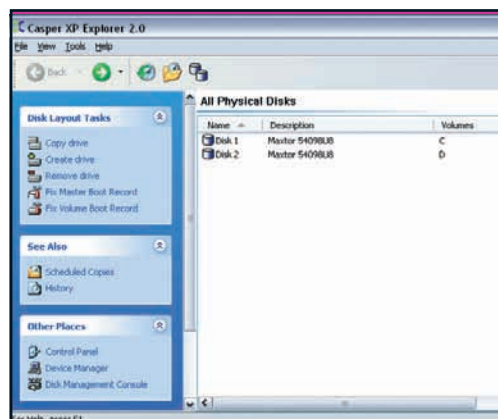
WESTERN DIGITAL MEDIA CENTER

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	7

Of all the processes involved in putting together an external card reader, you might have thought that counting the interfaces was a relatively simple one. However, the latest external drive from esteemed purveyor of platters Western Digital claims to have a built-in eight-in-one memory card reader, but we count SD, Memory Stick, Compact Flash and Smart Media. Four, right? It looks like WD has fudged it; it counts CF I & II and Microdrives as three separate cards,

DISK MANAGEMENT

Future Systems Casper XP 2



Casper Explorer enables you to work visually with drives and partitions.

two are quite redundant, as they can already be done in Windows using the New Partition Wizard, or through the Computer Management application. So, that leaves cloning partitions and

exploring them, both of which work well. The cloning enables you to migrate data from one drive to another while retaining all of the inherent information; compression, permissions and so on. If the source drive is bootable it also carries this across, which essentially means that you can perform the clone, power off, take out the old drive, and power on using the new one as if nothing had changed.

The problem with the cloning system is cited as a feature in Casper's product documentation: instead of

rebooting to perform the clone, it does it 'while you work'. The docs trumpet this as a big thing; after all, competing products need to leave Windows to do their work! But did the team at FSS wonder why most products reboot to do large disk work? It's because having someone work on the system while it's being cloned is rarely a good thing. The 'while you work' process often leads to inconsistent back-ups. If someone tries to install something, for example, the system may back up the program files and shortcuts, but not various DLLs placed in the Windows directory, leading to that program not working when it's restored.

Particularly lacking is support for the full range of operating systems. Windows Server 2003 and 64-bit Windows are unsupported, and right now FSS isn't doing enough to differentiate Casper's functionality from the old DOS command. The documentation is excellent, however. This is the one thing that FSS has worked hard to get perfect, and rightly so. Having said that, it's not enough to raise Casper from a one-shot utility to something wider and more generic.

Paul Hudson

INFORMATION

PRICE £30 (£26 ex VAT)
SUPPLIER www.fssdev.com
INFO www.fssdev.com

REQUIREMENTS

CPU 300MHz Pentium or equivalent
RAM 128MB
OS Windows 2000 or XP

The vast majority of launch products are either upgrades of existing packages or web browser/Notepad remakes that usually end up just the same as the product they were remaking. Now and then, however, a program comes out that's unique and unusual – one that actually manages to solve new problems. Casper XP falls into the latter category, but only just.

Casper does four things: it clones, creates and removes drives, and enables you to explore your drives with Casper Explorer. Of the four, the middle

PCPlus ratings

FUTURE SYSTEMS CASPER XP 2

Value

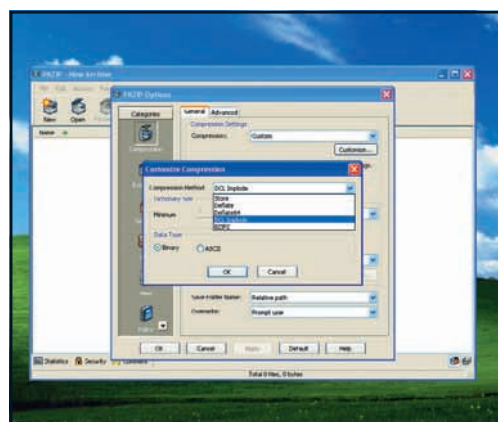
Features

Performance

OVERALL 7

COMPRESSION TOOL

PKWare PKZip Standard Edition 6



Use PKZip to make your compressed files more secure with up to 256-bit encryption.

While most compression applications simply put all the files you intend to send in one compressed file, PKZip includes encryption options, too. This isn't at all complicated. It has an easy-to-use

interface, which can even be made to look like Windows Explorer for extra familiarity. PKZip integrates fully with Microsoft Outlook and Lotus Notes. This means that when you want to create an attachment, you can use PKZip straight away without having to launch it independently. If you don't use Outlook you can send the files using other email applications.

Most important though, are the compression settings. PKZip offers the choice of five different levels of

compression. These are basically a trade-off between speed and efficiency. There's also a custom setting, which gives you five advanced format choices, such as Deflate, Deflate64 and DCL Implode. The latter of these provides a further option, namely which type of data you want to use: Binary or ASCII. Once you've decided on your compression type, you can also choose to encrypt your files. There are four different settings, giving you up to 256-bit encryption. If you're using PKZip as part of an office environment, you can dictate policies so that everyone is using the same formats and encryption methods. The program reads and writes to all the main formats, such as .zip, .tar and MIME.

There's just one potential problem. If you do use all these features, and you send a file created using PKZip, if the person at the other end doesn't have the software installed they won't be able to open it. To get around this, they can download the free PKWare Reader.

Whether you're a corporate or a home user, PKZip is an excellent package and value for money.

Henry Tucker

INFORMATION

PRICE £16 (£14 ex VAT)
SUPPLIER www.pkware.co.uk
INFO www.pkware.co.uk

REQUIREMENTS

CPU Pentium or equivalent
RAM 128MB
OS Windows 98 or later

PCPlus ratings

PKWARE PKZIP STANDARD EDITION 6

Value

Features

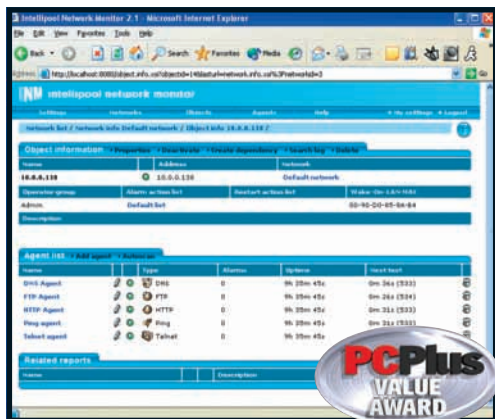
Performance

OVERALL 8

Zipping files may sound like a pretty simple task, but there are actually numerous options on offer to you. When it comes to PCs that are connected to the Internet, security is perhaps the most important issue. Most people are aware of much-publicised issues like viruses and hackers, but often don't pay any attention to the risk of their data being intercepted when it is emailed. It's this risk that PKZip helps to avoid.

NETWORK MONITOR

Intellipool Network Monitor 2.1



INM scans the local network for machines, detects services and monitors every minute.

full support for monitoring various protocols. Rather than try to use a catch-all monitor, INM has individual monitoring agents for each type of protocol, all brought together under one interface. This does, of course,

mean that it only supports a set number of protocols, but all the favourites are covered – IMAP, FTP, ODBC, HTTP, SSH, NNTP and more.

In order to verify that each of the protocols are working, it performs a simple request, such as requesting a file through HTTP, which means there's no chance of the port appearing open while the server behind it has crashed. The monitoring interface is entirely run over HTTP, which means you can easily view it wherever you want, using whatever device you have to hand.

Back when servers only ran Telnet, email and FTP, administration was a lot easier – you could check the CPU load with a few simple commands, and that would be enough to know the system was in good working order. Nowadays, an average machine hosts at least ten services, routinely split across a network, with advanced mirroring and failover solutions in place. Network monitoring has never been more convoluted.

Intellipool Network Monitor (INM) aims to solve this problem by providing

What's particularly clever, is the way INM discovers the available networks. Although you can configure it by hand, the simplest way is to allow it to run a network-wide port scan. In Autoscan mode, it checks the entire local network for machines; when it finds machines, it checks each of them to see what services are running. All the information is added to the database and monitoring commences. The tests run once every minute, but you can configure this to any time you want.

Beyond auto-detection, setting up the server isn't easy – there were quite a few HTML forms that were overly long, and the help provided wasn't up to par. The attempt at a configuration wizard was a nice try, but it isn't well thought-out. Plus, in order to keep the interface dynamic, INM has the whole thing refresh every 20 seconds. While this is probably fine most of the time, occasionally you'll find that it refreshes while you're halfway through selecting from the menus. These are minor niggles, though, which don't detract much from the overall high quality of the software, making it well worth evaluating at this excellent price.

Paul Hudson

INFORMATION

PRICE £138 (£117 ex VAT)

SUPPLIER Zen Software

0845 058 9058

INFO www.zensoftware.co.uk

REQUIREMENTS

CPU 800MHz Pentium III

RAM 128MB

OS Windows 2000, XP

PCPlus ratings

INTELLIPOOL NETWORK MONITOR 2.1

Value: 10/10

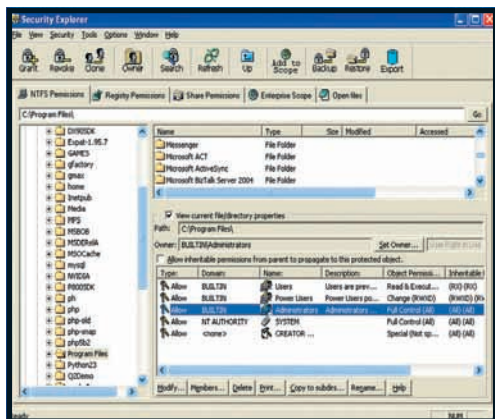
Features: 10/10

Performance: 10/10

OVERALL 8

SECURITY MANAGEMENT

ScriptLogic Security Explorer 4



The user interface isn't easy on the eye, but you'll soon see that the design is just right.

this does result in duplication of functionality, but more on that later.

The user interface for Script Explorer is a little overwhelming at first, with a mass of information. However, it could have been worse – ScriptLogic

has neatly organised the functionality into individual tabs, so everything you see is relevant. The standard Windows icons and layout mean you'll instinctively know your way around.

The default view shows you all the folders on your system and lists who has access. Yes, this is all information Windows will happily divulge, but in a clumsier manner. This is instantaneous, which makes all the difference. While the default view is helpful enough, just one click moves you to the Registry

view, where you can view and change which users can access the various keys. Again, this can all be done through RegEdit, but never so quickly.

One more click and you're in Share Permissions mode, which shows all the shares on the current computer (or any other local computer) and enables you to change permissions. You can do the same in the Computer Management MMC snap-in, and for once there's little useful difference between the two.

Beyond Share Permissions, there's an open file tab that lists all the open files on the system and who opened them. The Computer Management snap-in has this too, with the same functionality to boot.

So, is there anything really original about this product? Not really. It's a collection of information you can get from other places if you don't mind it taking 10 seconds longer. This is the unique selling point, and admittedly it does everything from one place. But the handful of unique features – such as the ability to back up or clone permissions – is lightweight, making the price rather outrageous.

Paul Hudson

INFORMATION

PRICE £605 (£515 ex VAT)

SUPPLIER ScriptLogic

+1 561 886 2420 (US)

INFO www.scriptlogic.com

REQUIREMENTS

CPU 166MHz Pentium

RAM 64MB

OS Windows 2000, XP, NT

PCPlus ratings

SCRIPTLOGIC SECURITY EXPLORER 4

Value: 10/10

Features: 10/10

Performance: 10/10

OVERALL 7

There's a wizard for configuring a web server, a wizard for setting up print sharing and a wizard for installing new software – so it seems rather strange that there are few tools to help you track basic information, such as who has access to your Registry. Security Explorer rectifies this situation, and it was mildly surprising to hear that ScriptLogic, a company with an established portfolio of Windows tools, had purchased its developer, Small Wonders, earlier this year. Yes,

INFORMATION

PRICE £293 (£249 ex VAT)
Cartridges £40 (£34 ex VAT)
SUPPLIER www.dabs.com
INFO www.iomega.com
WARRANTY One year

SPECIFICATIONS

CAPACITY 35GB Native/
90GB Compressed
INTERFACE USB 2.0
READ SPEED 254MB/s
WRITE SPEED 12.7MB/s
ROTATIONAL SPEED 4,200rpm
SIZE 10x7x75mm
WEIGHT 392g

EXTERNAL STORAGE

Iomega REV external drive



Buy one central unit, and you can swap cartridges in and out at will.

and its own fortunes.

So, meet REV - hopefully a more reliable version of Iomega's defunct Jaz drive. A few years back, Iomega made 1GB and 2GB versions of the Jaz drive, a removable cartridge that,

Ah... remember when we used to save data to little boxes of rusty tape and spend hours backing up our PCs? Of course, that was back in the days before Iomega's REV.

Will someone actually write that in a few years time? Well, Iomega sincerely hopes so, as the REV storage system is the company's last-ditch attempt to reclaim the glory years of the Zip disk. Those heady days are long gone and Iomega is now banking on this new removable hard-drive storage system to restore people's data

although useful, tended to gum up quicker than a London street at rush hour. The unreliability of Jaz was due to dirt particles being introduced each time the cartridge was used.

REV is aimed at small and medium businesses that are at present using tape systems to back up their databases and accounts programs. Each removable REV cartridge retails for £40 and holds 35GB of uncompressed data or 90GB of compressed data. The external interface on offer at the moment is USB 2.0 (you can also buy

an internal ATAPI drive), but FireWire and SCSI versions should be along by the third quarter of 2004.

REV has a transfer speed that's eight times faster than tape because it's based on hard drive technology. The drive itself comes with a suite of automatic back-up software and a copy of Norton Ghost for REV, which can back up a complete PC. You can even create a bootable back-up disk for disaster recovery, and all this takes place in the background.

In practice, REV is easy to use, virtually silent and seems fairly rugged. It remains to be seen whether the special air-lock mechanism and advanced engineering will keep out dirt and airborne particles and bring the long-term reliability that Jaz lacked, but the omens are good. The software installs easily and certainly takes the headache out of backing up.

Our one complaint with Iomega's REV drive is the price of the drive units. They're too expensive for the build quality. If the price scales down to a more reasonable £199, REV has every chance of replacing tape as the secure back-up medium of the future.

Mark Sparrow

PCPlus ratings

IOMEGA REV EXTERNAL DRIVE



INFORMATION

PRICE £135 (£115 ex VAT)
SUPPLIER www.microdirect.co.uk
0870 444 4456
INFO www.liteon.com
WARRANTY One year

SPECIFICATIONS

FORMATS DVD-ROM, DVD+/-R, DVD+/-RW, CD-ROM, CD-R, CD-RW
WRITE SPEEDS 4x (DVD+R), 2x (DVD-R, DVD+/-RW), 24x (CD-R), 10x (CD-RW)
INTERFACE USB 2.0
SIZE 135x22x174mm
WEIGHT 405g

RE-WRITABLE DVD DRIVE

Lite-On External 4x Slim DVD-Dual



Lite On's latest is out-dated on release, with 8x drives being available already.

So here is our protest, and our challenge: surely someone can make an external optical drive that can draw all the power it needs from your laptop's bus. Whether that means it needs three separate USB

Picture this. You're sat on a train, with your laptop, watching the latest instalment of your favourite television show. To your surprise, a fellow traveller approaches you, and informs you that he/she shares your love of that program, and hasn't seen that particular episode. You grin, reaching for a blank DVD and... denied. There's no plug socket on the train. You can't use your external DVD writer to burn him/her a copy of said episode.

cables, a combination of interfaces or even a solar panel, we don't care. It's not that this particular deficiency is in any way Lite-On's fault; nobody has provided us with the kit we crave. It's just that the puny 5V it needs to operate can surely be provided from elsewhere.

There are many things that are Lite-On's fault, not least that it has convinced its drive that the 4x DVD+R media supplied with it is only 2x. It managed to write an 8x DVD+R at 4x,

but that's hardly impressive, and seems like a waste of faster media. The first two discs that we burned were exactly that - a waste. While the Lite-On can read whatever it burns (albeit with a persistent squeaking noise) nothing else, apparently can. Both a Plextor DVD writer and a Pioneer DVD-ROM drive spat out the Lite-On's offerings. The third disc was accepted by the Pioneer, but with read times so protracted that it wasn't worth it, although its CD-Rs were fine. It's a shame, as a 14min 13sec burn time for a 4.7GB DVD+R isn't bad at all, even compared to the latest 8x alternatives.

Lesson for the day, then, is if you're planning on buying this compact and aesthetically-pleasing external DVD writer, we heartily suggest that you don't ever use any other optical drive with your laptop again. Otherwise you may find that a lot of your backed-up data is unreadable. Hopefully, firmware updates will correct the array of unusual problems it's currently suffering from, but for now Lite-On's latest is erratic, to say the least, and so not really worth splashing out on.

Alec Meer

PCPlus ratings

LITE-ON EXTERNAL 4X SLIM DVD-DUAL



THIN CLIENT

Neoware Eon e300



The e300 will look good on the desktop – and it won't take up too much space.

desktop solution, as it amalgamates a 15in TFT screen with a VIA C3 embedded processor, plenty of main and Flash memory, plus all the ports most users are ever likely to need. These are all tucked away tidily

underneath the base of the screen, and there's also a PC Card slot hidden in the side of the monitor, so that you can add wireless connectivity if this is required. Graphics are also handled well, with the screen supporting resolutions up to a useful 1,024x768 at a 24-bit colour depth.

Build quality is impressive, with the chassis feeling particularly solid – and its sleek silver finish will look good on any desktop. With Windows XP Embedded holding the reigns you'll find the boot-up sequence is generally

faster than for Linux-based thin clients. Both Microsoft's RDP (remote desktop protocol) and Citrix' ICA (independent computing architecture) clients are included, and you can create and save multiple connection profiles. We had no problems connecting to our standard Windows Server 2003 system running Terminal Services and DHCP, and had the e300 logged on in a matter of seconds using the Remote Desktop Connection utility.

To reduce any overheads the Windows interface is severely cut down, but otherwise the look and feel is the same. You also get IE6 pre-installed for direct client web access, and for running Java applications without adding any load to the terminal server system, but this also gets a chop as even the help files have been removed.

Thin clients are the ideal solution if you're looking for centralised control and management, plus tighter security. Even when they're preferred simply as a space saver they still have a lot to offer, and the sleek and well-specified e300 certainly won't take up very much desktop space.

Dave Mitchell

INFORMATION

PRICE £848 (£722 ex VAT)
SUPPLIER Neoware 0134 438 2164
INFO www.neoware.com
WARRANTY Three-years RTB

SPECIFICATIONS

CPU 800MHz VIA C3
RAM 192MB Flash/256MB SDRAM
OS Windows XP Embedded
CONNECTIVITY 10/100BaseTX Ethernet port, 9-pin serial, 1x parallel, 2x USB ports, PC Card slot, ic/line in/out sockets, Microsoft RDP and Citrix ICA clients included
SCREEN 15in TFT supporting 1024x768 with 24-bit at 60Hz
OTHER Internet Explorer 6 pre-installed

Most blue chip vendors only keep a modest range of thin clients in their portfolio, because the lion's share of this market has traditionally been shared between specialist companies such as Wyse and Neoware, so there's been little point in other companies trying to make any serious inroads into this territory. And it's easy to see why, with this latest Eon thin client from Neoware delivering superb build quality, design and specification – and all at a very reasonable price.

The e300 on review is a complete

PCPlus ratings

NEOWARE EON E300

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 7

COLOUR LASER PRINTER

Brother HL-2700CN



Massively heavy, the HL-2700CN is a big Brother of Orwellian proportions.

The technology is based on a four-colour dry toner system, with separate toner cartridges for cyan, magenta, yellow and black, plus a separate fuser section. At five per cent A4 page coverage, the black

cartridge should be good for 10,000 pages, and each colour cartridge should last for 6,600 pages. This puts mono printing costs at a miserly 1p per print, and full colour at a still-reasonable 4.7p, not counting replacement fuser units which are built to last almost a lifetime (60,000 pages).

Speed is as impressive as the low running costs, at least for mono pages, which can be churned out at 31 pages per minute. Colour is rather slower, around 8ppm. In our tests, after a 42-

second warm-up time, first page output was achieved in 14 seconds for mono text and 19 seconds for colour. The brains behind the fast output is a 300MHz processor backed up by 64MB of RAM as standard, with add-on memory available up to 576MB.

Print quality is excellent, with razor-sharp mono fonts and crisp colour output. Naturally, you don't get the full glossy photo output you would expect from an inkjet, but the results are excellent nonetheless. Print resolutions start at a modest 600dpi and advance through a 1,200dpi mode to an extremely fine 2,400dpi, using Brother's CAPT (Colour Advanced Photoscale Technology), which brings out the finest detail in DTP work or photos.

PCL6 and Postscript language support is built in, as well as support for standard Windows printing, all available from a friendly menu and control system, both on-screen and on the printer itself. £600 would be a lot of money to spend on a personal laser but the HL-2700CN also features full Ethernet connectivity as standard. It's a great all-round business tool.

Matthew Richards

INFORMATION

PRICE £599 (£509 ex VAT)
SUPPLIER Brother 0870 830 4000
INFO www.brother.co.uk
WARRANTY One year

SPECIFICATIONS

PRINT SYSTEM 4-colour laser
MAX PRINT SPEED 31ppm mono, 8ppm colour
MAX PRINT RESOLUTION 2,400dpi
MEMORY 64MB standard, up to 576MB optional
INPUT TRAY STD 250 sheets standard, 530 sheets optional
INTERFACE USB, Parallel, Ethernet
SIZE 480x420x385mm
WEIGHT 30.5Kg

PCPlus ratings

BROTHER HL-2700CN

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 9

We've got a whole raft of mono personal laser printers in this month's Lab Test but, if you need to have colour, Brother has just added the new HL-2700CN to the growing ranks of colour lasers. Compared with colour inkjets it's a weighty beast, no less than 30.5Kg in standard trim, and that's before we come to any of the bolt-on goodies that are also available. These include a fully-automatic duplex unit for double-sided printing and a cavernous 530-sheet second input tray.

4MP DIGITAL CAMERA

Panasonic Lumix DMC-LC70



There's no killer feature, but this is an excellent all-round package for the price.

the market. You don't get aperture-priority, shutter-priority or manual modes, but the basic program AE mode is backed up by a small selection of 'scene' options, all accessed via the clearly-labelled main dial.

There are some hidden depths, too. There's a rather clever 'pre-focussing' option, which eliminates shutter lag when you're taking action shots. If you're shooting in tricky lighting conditions, the auto-bracket feature will take three shots at three separate exposures so that you can choose the best one later.

The LC70 is rather well made and intelligently designed, too. The finish is plastic rather than metal, but it's robust and feels more expensive than it is.

On the back, the 1.5in LCD is clear and crisp, and the controls are clearly

laid out. The four-way navigational controller is particularly good, and while you're shooting it offers quick access to the EV compensation, exposure bracketing, flash and self-timer options.

The LC70 is easy to use and starts up quickly too; it's ready to shoot around a second after you've pushed the power switch. You might want to increase the 'sleep' delay so that it doesn't power down quite so quickly when not in use, but this serves to highlight another impressive feature. Panasonic quotes a battery life of 320 shots if you use the LCD, and up to 850 if you use the optical viewfinder. That's pretty extraordinary for a pair of NiMH AA cells.

On top of all this, the picture quality is really impressive. There's a tendency to colour fringing around highlight areas, but that's not uncommon in cameras of this type, and it's the LC70's only flaw. Otherwise, shots prove sharp and well-saturated, and the exposure system's accuracy in a variety of lighting conditions is well above average.

The LC70 doesn't stand out in terms of specifications, but the overall package – price, build quality, design and performance – is excellent.

Rod Lawton

INFORMATION

PRICE £230 (£196 ex VAT)
SUPPLIER Panasonic 0870 300 1515
INFO www.panasonic.co.uk/lumix
WARRANTY One year

SPECIFICATIONS

TYPE Digital compact
EFFECTIVE PIXELS 4 million
APERTURE f2.8-4.9
FOCAL RANGE 5.8-17.4mm (35-105mm equivalent)
ZOOM 3x
STORAGE MEDIA 16Mb SD card
FILE FORMATS JPEG, QuickTime Motion JPEG
DISPLAY 1.5in, 114,000 pixels
INTERFACE USB 2.0, AV (NTSC/PAL)
POWER 2x NiMH AAs (supplied, with charger)

PC Plus ratings

PANASONIC LUMIX DMC-LC70

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	9

Panasonic's LC70 gives you a heck of a lot of camera for the money. 4-megapixel resolution for just £230 is very good indeed. Panasonic has clearly been disappointed by UK sales of its recent offerings. For the time being at least, the LC70 will be available only via Panasonic's 'eshop' at www.panasonic.co.uk.

The purchase price doesn't just include VAT and delivery; currently, Panasonic is also offering a free Crumpler digital camera bag.

Feature-wise, the LC70 is pretty well what you would expect in this area of

MULTIMEDIA PROJECTOR

NEC MultiSync LT170



Pop this on a tripod and you can stand by the nearest A-road scaring motorists.

than most LCD projectors at 1,000:1.

Setting up the projector is easy. Dual drop-down feet offer good desktop stability, and the manual focus and zoom are simple to adjust. The projector also comes with

a tripod adaptor, which is a useful alternative way to mount it. Annoyingly, the throw ratio is on the long side at 1.8:1, and adjustment isn't helped by the minimal 1.1:1 zoom.

As we've come to expect from most DLP projectors the geometry is spot on, and the focus is good across the entire screen. The scaling of the projector also impresses us; text is readable down to 6-point, and running at 800x600 gives very impressive results. Colour on the whole is good, although not as vibrant

as we would like. We also had problems calibrating the black and white spots properly, and generally there's a little more light on the full screen black than we would normally expect. For general video work, however, the image quality is excellent, and the noise reduction system performs an excellent job.

Inputs are the standard VGA-in, S-Video, composite and audio, while general extras extend to a padded carry case. Once up and running, we found it to be a little on the noisy side, even with the economy mode switched on, and the top of the projector does get very warm. The projector-mounted menu controls are excellent, with a great wheel control. The remote, while dull-looking, offers all the controls that you need, but we would like a laser pointer and backlight.

While there's nothing here that should really worry you, there are now so many projectors in this category that you can afford to be a little pickier. The best options, such as the InFocus LP120 or Optoma EP725, offer lower pricing and a longer lamp life, making them better options.

Neil Mohr

INFORMATION

PRICE £1,588 (£1,351)
SUPPLIER www.ivojo.co.uk
 0845 126 0530
INFO www.nec.co.uk
WARRANTY Three year on-site exchange

SPECIFICATIONS

SYSTEM DLP
RESOLUTION XGA 1,024x768dpi
ANSI LUMENS 1,500
CONTRAST RATIO 1000:1
LAMP LIFE 1,500 hours
AUDIO 500mW speaker
SIZE 12x9x28cm
WEIGHT 1.8kg

PC Plus ratings

NEC MULTISYNC LT170

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	6

Classed as a micro projector, this latest offering from NEC takes on the increasingly-popular thin boxed shape design. But, unlike alternatives from InFocus and Toshiba, this projects from the thin end, making for a more stable projection base. This projector is built around an XGA DLP system, and offers mixed performance. Still, with 1,500 ansi lumens brightness, it's clear enough for most lit offices and, while the contrast ratio isn't as good as we would expect, it remains far better

INFORMATION

PRICE £40 (VAT N/A)

SUPPLIER www.pocosystems.com

INFO www.pocosystems.com/barca

REQUIREMENTS

CPU Pentium or equivalent

RAM 64MB

OS Windows 98 or later

IN A NUTSHELL

This is a powerful Outlook 2003 replacement, at least for home systems. Barca combines standard email with calendar features, notes, planners and many more features, in a fully-scriptable environment based on the PocoMail client.

PERSONAL INFORMATION MANAGER

Poco Systems Barca



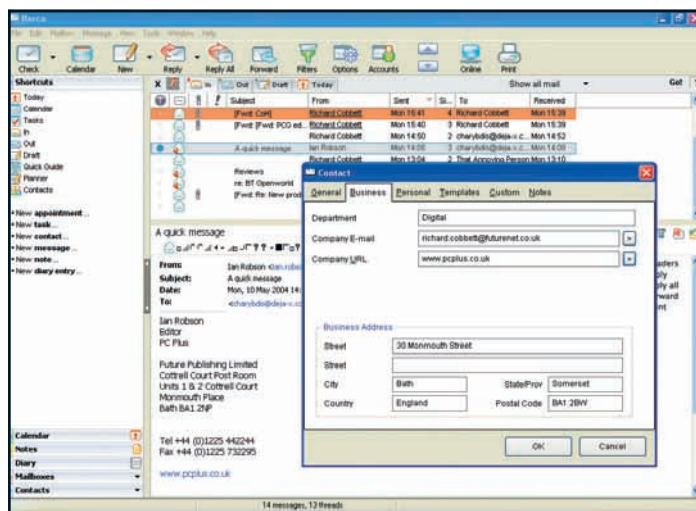
Barca is a powerful alternative to Microsoft Outlook, not Outlook Express. This immediately sets it apart from most other contenders, such as Thunderbird, Eudora and even the excellent PocoMail, which provides the powerful mail controls at its heart. It's not simply a mail client, nor a suite of programs like Mozilla, but one centralised personal information manager with a knob and bolt for just about every aspect of your digital life.

The most immediately visible difference is that Barca isn't as slick as Outlook 2003, in look or in feel. Its bars are somewhat thin and reedy, and its Today panel is broken into simple lists rather than Outlook Today's more complicated approach. However, much like PocoMail, the real power of Barca is its almost ludicrous level of customisability. Everything is adjustable, from the font used to display messages to the name and colour of each message category. Dive into a mail folder and you can start editing which columns should be displayed, and the level of password protection for every sub-folder. Barca is a very, very powerful PIM, and that's before you get involved with its scripting facilities.

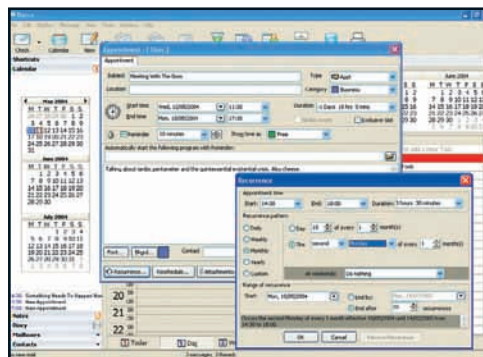
Making contacts

Contacts provide the perfect demonstration of Barca's abilities. Firstly, like with PocoMail, creating rules for everybody on your list is as easy as dragging them onto the appropriate directory. More interestingly, however, you can create a set of templates, assigning each person a suitable new email reply template and other stationery, automatically pulling it all into play. This makes it easy to have a generic greeting for random people, along with an auto-grovel response for dealing with your managers. Each template can be rigged with a number of tags, automatically inserting names, dates,

custom information and even a random line from any text file that you point to (ideal for signature quotes, amongst other uses). Barca offers plenty of added security, rendering HTML code via its own built-in viewer rather than the IE browser component, and automatically sanitising emails to protect you against web bugs. In addition, full Bayesian filtering is supplied as standard, complete with sliders for setting how draconian you want the rules to be, and the option to delete obviously dodgy emails on the



Contacts hold all kinds of information, from whether somebody prefers styled or plain emails to which templates should be used to reply to them.



The built-in calendar is Barca's most useful feature, both on its own and when working with groups.

server, retaining only the headers in the event that you made a mistake.

Of course, there's more to Barca than email. As with Outlook, you get an integrated calendar. This holds your daily information, displaying it on an easy-to-follow chart, with full colour coding and the ability to display multiple simultaneous activities, or devote a period of time to one particularly important task. Particularly useful is the ability to set recurring tasks for particular dates, such as the second Monday of every month, and automatically shunting any work event that land on the weekend into either the Monday or Friday, depending on its importance. Longer events can also be put onto a full Planner view, showing you your whole year's activities.

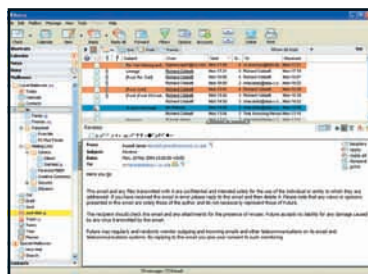
There are a few minor problems, however. While Barca never outright crashed on us, we did get several exception errors. This was usually for minor things, such as trying to pull a random quote from an empty file, but

occasionally we had trouble just visiting the In mailbox, or carrying out other everyday activities. There are a number of other niggles, including the ease with which you can drag a Calendar appointment around the screen but not instantly undo your action, and the fact that you can't

reshuffle mail folders and sub-folders around with anything approaching ease. These give rather a rough edge to this first release. More pressingly, it remains to be seen how well it can take over from Outlook in a full corporate environment. The benefits of Microsoft's offering kick in when it's hooked up to Exchange, for calendar sharing and other groupwork tools. Barca has a few connectivity options for sharing information over a network, but nothing like as many as Exchange.

Where it really succeeds is on a single-user system, providing instant, integrated access to all your important information rather than scattering it between multiple email, calendar and other clients. Bearing this in mind, the £40 price tag is quite reasonable. Barca gives you much more power than most standard mail packages, without you having to shell out for the full Outlook pack, not to mention giving you a mail client that isn't first before the firing line every time a virus writer gets twitchy fingers. It's an excellent system, if perhaps a trifle over-ambitious given the competition.

Richard Cobbett



The mail client will be instantly familiar to PocoMail fans. This is the Editor's Choice-winning package from PC Plus 211.

PC Plus ratings

POCO SYSTEMS BARCA

Value ○○○○○○○○○○

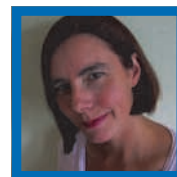
Features ○○○○○○○○○○

Performance ○○○○○○○○○○

OVERALL 8



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**Jane Dudman**

jane.dudman@ntlworld.com

Jane Dudman specialises in writing about developments in the legal, financial and public sector markets

The refurb market

Buying not-quite-new IT equipment can save you a lot of money. **Jane Dudman** looks at the pros and cons of the refurb market

Small businesses need to make their limited IT budgets stretch as far as possible, and one way of maximising spending power is to look at buying refurbished PCs, rather than buying brand-new systems. It has always been possible to buy not-quite-new PCs, but there has been a definite upswing in interest in this part of the market over the past couple of years.

One of the driving forces behind this trend has been recent legislation on the disposal of computers, particularly the European Waste Electrical and Electronic Equipment (WEEE) Directive, which becomes UK law in August. This directive sets out guidelines for the disposal of IT hardware in all EU member states, and spells an end to the days of simply throwing unwanted or obsolete machines out into a skip on the street. These days, when corporates upgrade, they have to dispose of their rejected machines responsibly, and this has created a useful sideline in ex-corporate systems.

The other side of the refurb market is a natural offshoot of manufacturers' returns policies. Inevitably, major PC suppliers will have machines returned to them, some simply because the buyer has changed their mind, some because of minor faults that can be easily fixed. But, once back with the suppliers, these systems cannot be sold as new. Instead, they're sold as refurbished machines, and are available at a substantial discount on the price of a new PC.

"We saw this as a gap in the market," explains John Gallagher, managing director of Glasgow-based PC Depot, which began selling refurbished PCs three



Refurbished HP/Compaq machines, including P3 800MHz SFF base units, are available for under £100, ex VAT, from Re-Tek.

years ago. "There were plenty of people selling second-hand PCs, but they tended to be pony-tailed smokers. At the other end of the spectrum is PC World. We felt we could give small businesses access to reliable, high-quality, refurbished machines."

PC Depot, which sells machines through its website (www.pcdepotonline.com), over the phone and to walk-in customers at its premises in Glasgow, has seen competition increase in the three years it has been in business.

"The online competition, in particular, is pretty hot," says Gallagher. "The latest legislation makes it easier to get hold of ex-corporate machines, and there are more companies doing disposals and taking the PCs from the corporates." PC Depot feels it can hold its own amid this increased competition by focusing on the service it provides, and on building up customer relationships. The company also puts together packages for its customers, which isn't

WHAT TO WATCH OUT FOR

- Be prepared for less choice and less up-to-date machines.
- A refurbished PC may have a less-than-pristine appearance, so be prepared for some scratches and dents.
- Check the warranty; some suppliers give a one-year warranty, others much less.
- Check the return terms; most suppliers will not repair or replace refurbished machines, but will provide a cash refund.
- Check the machine to ensure it has no old data on it; this should have been wiped by the supplier.
- If the machine includes software, ensure that it's accompanied by the original CD or floppy disk.

always the case with refurb suppliers. PC Depot sells systems that include a printer, modem, power cables and, in most cases, software.

This is one aspect of buying refurbished machines that customers need to bear in mind. Most refurbished PCs don't come with software and, even where software is available, it will cost extra, rather than be bundled in. The cost isn't great – PC Depot sells Windows 98 for £30 – but it does need to be taken into account, particularly if a business is buying multiple machines.

Having begun as a channel to sell ex-corporate machines, PC Depot also sells factory refurbs – machines returned to manufacturers that can no longer be sold as new. This has an advantage in that whereas ex-corporate machines, however well they've been treated, are generally a couple of years or so old, the factory refurbs are practically the same spec as many brand-new systems. "It puts us into that market, which is good for us, and people understand that these machines will do all they need them to do," says Gallagher. "If we're selling a machine for just under £300 that they could buy new for £400 or £500, that is all money saved."

Making the grade

This is a message that the refurb suppliers have to get over loud and clear, in a market where the price of new PCs is dropping all the time. And the message to prospective customers from suppliers such as PC Depot is two-pronged. On the one hand, your business can save money on the basic machine that can then, if necessary, be spent on accessories and peripherals that might otherwise be beyond the company budget, such as a larger monitor. At the same time, customers are either getting virtually a brand-new machine, in the case of factory refurbs, or, if they're ex-corporate systems, good brands that have been built to top specifications.

Brands sold by PC Depot, for instance, include Dell, Compaq, IBM and Hewlett-Packard. "These are big brands, and because they were built a couple of years ago, when these companies were making more money, they were built with better components," comments Gallagher.

The amount of money that can be saved by buying a factory refurb or ex-corporate refurb varies considerably, so it pays to shop around and do some price comparisons, although this is not as easy as when buying new machines, because the range of hardware is more limited.

Refurbished stock is graded into three categories: A, B and C. A is the top grade, for systems that may have minor blemishes on the

Refurbished servers from Dell Outlet don't ship with an operating system, unlike refurbished desktops and notebooks.



John Gallagher of PC Depot. "We felt we could give small businesses access to reliable, high-quality refurbished machines."

casing, but have been fully tested and are in full working order when they leave the supplier. This makes it possible for the refurb suppliers to emphasise the quality of the systems they're selling.

Independent refurb outlets, such as PC Depot, Cancom UK, Getmeapc.co.uk and Dataserv-ces, which runs lowcostcomputer.co.uk, offer substantial discounts. Slightly different is Morgan Computers, which has a large UK operation selling end-of-line stock (www.morgancomputers.com) – these are new machines, but they are models that have been discontinued by the manufacturer, rather than having been refurbished.

While many of the independent refurb firms sell

"Your business can save money on the basic machine that can then, if necessary, be spent on peripherals."

quite a wide range of stock from major manufacturers, Watford-based refurb specialist Get Me A PC (www.getmeapc.co.uk) has opted for a policy of selling only Dell machines. "We sell only Dells because they are nice, easy machines to maintain," says Tony Rivenell, managing director of Get Me A PC. "It also means users know they will be able to get the same machines. They can buy 10 this month and come back to us later and buy more."

The company is selling a 350MHz Pentium II Dell Dimension for £139 plus VAT, including a 17in monitor, keyboard, mouse, modem and power cables, but with no software. On top of that, there's a £15 delivery charge for getting the system to anywhere in mainland Britain. An 'Internet ready' Pentium III system, with a 17in monitor, modem, speakers and 128MB CD ROM is selling for £198.58, including VAT. Get Me A PC doesn't sell laptops, servers or printers, and points out that the monitors may not be Dell models. "All our products are from corporates," says Rivenell. "Generally, they have been well-



maintained. We sell only grade A stock, because we think when customers buy mail order, the goods should turn up looking new."

Rivenell adds that one reason for increasing competition in the refurb market is that more suppliers are beginning to realise that there's more money in refurbished kit than in the new market. "They are cheaper to buy and there is a bigger profit margin," he comments. "When I look at the margins on new kit I get very scared."

Another place to buy refurbished kit is Retek Direct (www.retekdirect.co.uk). This is the online sales arm of Re-Tek UK, which specialises in buying components and systems from both suppliers and corporates. A lot of the components bought by Re-Tek are sold direct to computer dealers, but its website also sells refurbished systems and components to the general public. It sells only hardware; no software is included.

"For several years, the big boys have paid absolutely no attention to this market, but now it's starting to gain momentum," comments Martin McDermott, a director at Re-Tek. An entry-level, two-year-old 650MHz Pentium III laptop sells on the Retek Direct website for around £250 plus VAT. "That is a substantial saving over a new entry-level laptop, which might be about £600," points out McDermott. As McDermott says, manufacturers also offer

refurbished machines direct. Most manufacturers have so far preferred to deal with returns indirectly, by selling them on to third-party firms, but there are some manufacturers, most notably Apple and Dell, that sell refurbished kit direct to the general public.

Apple Computer's UK online refurb store (<http://promo.euro.apple.com/promo/refurb/uk/>) opened in mid-2002. The company provides a good deal, with discounts of up to 45 per cent on the list price, but sales are carefully controlled. The site itself

is open only once a week, on Wednesdays, from 10am to midnight. You must pay using a credit card and can only buy online; telephone orders aren't accepted.

"Due to limited volume of units, we want to avoid this store being empty most of the time," says Apple. "So we 'stack' quantities during the week and propose them in one day." Apple recommends to prospective customers that, since quantities of its refurb machines are limited, it's a good idea to create a store account before the store opens, to save time when ordering.

Refurbished units are sold as they come and as customers order. The first orders get the first units.

Again, sales are of hardware only.

Apple won't say how many systems it has sold via the Refurb Store, and is also unwilling to give details of exactly how old, or new, the systems that it sells through this channel are. The company also insists



Notebooks, PCs and servers bought from Dell Outlet have been returned and tested before being put on sale.

YOUR RIGHTS

What happens if you're not satisfied with your refurbished purchase? All PC buyers will know that it can be a frustrating job trying to get problems sorted out post-purchase, and this applies just as much to refurbished machines as to new. The Sale of Goods Act 1979 (as amended) applies to second-hand goods bought from commercial vendors, but rather than relying on falling back on these rights, it's preferable to know your position before you buy: most suppliers will provide a cash refund, but will not repair or replace refurbished machines. It's also a good idea to check before you buy what the procedure is for dealing with any post-sales complaint, and to make a note of the relevant details.

Case study: A satisfied customer

How a plumber found the right tools to tackle his computing jobs

Gerry Goodridge runs Glenridge Services, a small plumbing, heating and electrical supply business based near Watford in Hertfordshire. The company has a staff of four, including himself, and works for a wide range of clients, including TV production company Endemol – so he can make the proud boast that he installed the plumbing for the first two Big Brother houses, not to mention Fame Academy.

As a former software developer, Goodridge is fully aware of the need for power when running certain applications, but he takes a pragmatic approach when it comes to buying the IT he needs to keep his business running effectively.

"My view is, if you need a tool, get the right one," he says. Goodridge has only a rudimentary website, and is not running any particularly heavy-duty software applications. Like many other

small businesses, he uses his system for basic office administration, including word processing, email and accounting. "All we really need is Microsoft Office," he explains.

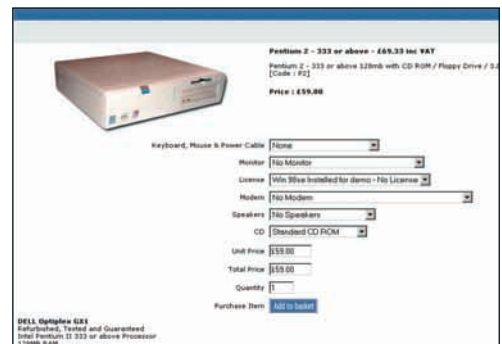
When the older computers that the business had been using were starting to creak at the seams, Goodridge decided to take a look at the possibility of buying refurbished PCs, rather than splashing out on brand new machines. He tracked down Tony Rivenell's Get Me a PC website, and liked the look of what he saw. "I also talked to Tony," explains Goodridge. "I spoke to him about Pentium IIIs, but he said a 350MHz Pentium II would probably do the job."

Goodridge liked Rivenell's approach, and he also liked the prices. Three months ago, Goodridge bought three PCs, at £140 each plus VAT. Two of the machines were for the office, with the third PC now being put to good use by

Goodridge's daughter, who's studying for her AS Levels.

Each PC came with a 17in monitor, mouse, interconnect cables and a demonstration version of Windows 98. The full licensed version of Windows 98, which Goodridge has purchased, was extra.

As for the warranty, Goodridge noted that the systems came with a six-month warranty, which he felt was helpful, but not absolutely vital. "For that price, does it matter?" he points out. "We had an assurance that they would swap out the systems if there was a problem. For what I'm using them for, these systems have been more than enough." ■



Get Me A PC (www.getmeapc.co.uk) specialises in selling refurbished Dell systems.

that it's not competing with independent refurb outlets. Apple's refurbished products include demonstration machines, units needing minor repairs and customer cancellations. These items have been fully tested by Apple and carry the same guarantee and support as all new Apple products; that is, a standard one-year warranty. However, customers should note that in most cases – and Apple is no exception – if they return a refurb unit, they will receive a refund, rather than having the machine repaired or replaced (see the sidebar 'Your rights' on page 135).

Dell's refurb business, Dell Outlet (www.dell.co.uk/outlet), is a relatively large operation. "Because Dell has a direct sales model and because the company sells so much kit, the reality is that it gets some returns," says a Dell official. "Returns are only a small percentage of the overall volume of sales but, because of the size of the business, it is enough to run a business in its own right."

Dell says all products bought from Dell Outlet are similar to systems purchased new from standard Dell sources, except that they've been returned, tested and then sold at a discount. Refurbished desktop and notebook systems ship with the operating system they were originally sold with, but servers don't include an OS.

The buyer's guide

When considering buying refurbished machines, there are several things that should be taken into account. While the machines will have been fully tested by the supplier, their condition may vary, and they'll almost certainly arrive in boxes and packaging that have been knocked about a bit, since these are systems that have already been in transit several times.

Check what you will get. This is particularly important in relation to software. Some refurbished machines come with no software at all. Others may include just the operating system, but no applications. If any software is supplied, ensure that you know what you're getting. Ideally, it will be supplied with the full manual and original CD-ROM, but this isn't always the case. Dataservices, for instance, makes it clear that while it supplies a certificate of authenticity (COA) to validate any software pre-loaded onto its refurbished machines, it doesn't supply a CD-ROM copy of the software.

Also check whether you'll get all the driver disks needed to install features such as the sound card, graphics cards and keyboard. Some suppliers, such as PC Depot Online, clearly state that these are not provided and users will have to download the drivers from manufacturers' websites.

Another important factor is the question of residual data. Under the Data Protection Act, it's an offence to dispose of any computer containing personal data. The responsibility for ensuring that all data is wiped from previously-used PCs lies with the person or organisation disposing of the machine. In the case of refurbished PCs that are customer returns this is unlikely to be a problem, but obviously ex-corporate machines must be thoroughly wiped and checked. Although the legal liability for this falls on the organisation getting rid



of the machine, most refurb suppliers also carry out their own, additional checks and cleaning of PCs, to ensure that all data has been wiped.

Another big issue is warranty and back-up. It's important to check in detail all warranty conditions on refurbished systems. On laptops, for instance, it's a good idea to check whether the warranty is the same for both the hardware and batteries. Most new PCs and peripherals come with a 12-month manufacturer's warranty for hardware and labour; most refurbished PCs come with a three-month warranty.

There are exceptions, such as the full one-year warranty offered by the Apple Refurb Store. In other cases, warranties may be longer than three months, but with conditions attached. Getmeapc.co.uk, for instance, offers a six-month hardware warranty, but with some conditions. If the hardware fails within three months the firm will replace the PC, but if it fails in the second three months, it will be have to be returned to the firm for either repair or replacement.

Similarly, PC Depot Online offers a six-month warranty on laptops, but this doesn't cover batteries. "We offer a six-month warranty on laptops as a recognition that generally people are spending a bit more," comments Gallagher, at PC Depot Online. But the warranty on the batteries is shorter (hence the need to check warranty terms before purchase). "We have to be realistic," acknowledges Gallagher. "Battery life is shorter. But we do some very good-priced replacements."

One recent customer who bought a mid-range Inspiron laptop from Dell Outlet, saving about £600, was pleased with the price and service, but he had a query regarding the bundled software, which took some time to resolve. "I made a very frustrating seven calls to Dell's after-sales support call centre," the customer explained. Despite this, and despite being forced to take a bundled ISP, the customer still felt that, overall, they had got very good value, paying just £1,095 for a Pentium 4 laptop, including Microsoft Office and a free carry-all. There's not doubt that there are some good deals to be had in the refurb market, but need to make sure that you do your research before parting with your money, and make sure you check the small print. **PCP**

Dell Dimension PCs are being sold at substantial discounts via the Dell Outlet online store.

"There are some good deals to be had in the refurb market, but you need to do research, and check the small print."

1.8GHz PENTIUM M 'DOTHAN' NOTEBOOK PC

Rock Pegasus TI

Reviewing Rock's Pegasus TI is not about the way the laptop looks – and with its slim, black and silver chassis it looks classier than many portables. It's not about how big the hard disk is, or how many texels the graphics processor can fling. Nor are we focusing on expandability and connectivity. The TI stands out this month because it's the first machine to incorporate Intel's new Dothan-core Pentium M.

While the original Banias-core chip had 1MB of L2 cache and topped out at 1.7GHz, Dothan doubles this amount, and increases the clockspeed to 1.8GHz and beyond. Because the new strained silicon has been fabbed using the 90nm process, Intel has been able to reduce the transistor size, and thereby increase the number of transistors (from 77 million to 140 million) for greater performance. Under Intel's new numbering system, this 1.8GHz chip will be dubbed the 745.

As ever, the proof is in the testing. In tests with MobileMark 2002, the Pegasus TI posted an excellent score of 199, while the internal battery ran for 162 minutes. Dothan certainly makes good on its promises for enhanced performance – few laptops we've tested have managed to post scores near the 200 mark. One thing to note is that, as the processor draws more power to deliver this performance increase, the battery life suffers. Here it's fallen to just under three hours, which is slightly disappointing, especially as we've come to expect three to four hours from Banias-core Centrino laptops.

Loaded with an ATI Radeon Mobility 9600 IGP, the 3DMark2001SE score generated during testing hits a good average of 8,514, while a workout with 3DMark2003 rated the system with 2,202. Again, we've seen better from machines with more powerful



Rock will supply the Pegasus TI in three different colour schemes, black, red and blue, although it's the Dothan core Pentium-M inside that we're more interested in.

processors, although Rock plans to switch the 9600 for the new 9700 in its final production model. The benchmark scores will jump accordingly.

The rest of the TI's spec includes a 60GB hard disk drive, 512MB of main memory and a DVD-ROM/CD-RW drive. The latter component comes as something of a surprise – but again, this is a pre-production model, and Rock has detailed a more up-to-date Sony DVD/RW unit as its replacement. The black and silver chassis gives it a solid, yet surprisingly slim feel. This is despite the presence of the 15.4in widescreen LCD, which is capable of a native resolution of 1,280x800 pixels.

The Dothan-core processor may grab all the headlines here, but the rest of the machine still needs to make the grade. Take a tour around the rest of the chassis and you'll find a trio of USB 2.0 connections, plus single PCMCIA

and FireWire connections. There's also a 3-in-1 card reader here, while wireless embraces 802.11b and 802.11g, thanks to a 54Mbps wireless module.

For now, the first Dothan chips offer nothing to get truly excited about. Like ATI's 9700 IGP, the 1.8GHz Pentium-M featured here is an evolutionary, rather than a revolutionary, step forward. Considering the increased power required by the chip, we're unlikely to see a big impact on laptop performance and functionality until Dothan processors are incorporated alongside Intel's Alviso chipset in the 'Centrino 2' or Sonoma platform.

Nevertheless, the arrival of this 1.8GHz Pentium-M does mark an important technology shift. With a good balance between performance and battery life it's an ideal all-rounder. But wait a while for the price to fall.

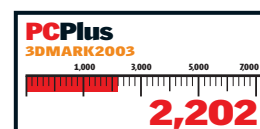
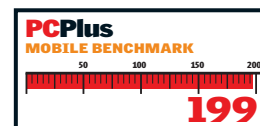
Dean Evans

INFORMATION

PRICE £1,468 (£1,249 ex VAT)
DELIVERY £24 (£20 ex VAT)
SUPPLIER Rock 0870 990 9090
INFO www.rockdirect.com
WARRANTY Three years

SPECIFICATIONS

CPU 1.8GHz Intel Pentium M 745
RAM 512MB
HDD 60GB Hitachi Travelstar (7,200rpm)
DRIVES DVD/CD-RW UJ-815
GRAPHICS 128MB ATI Radeon Mobility 9600
SCREEN 15.4in widescreen TFT LCD (1280x800)
SOUND Realtek AC'97
SPEAKERS Stereo
COMMS 802.11b/g, 10/100 Ethernet, 56K modem
PORTS 3x USB 2.0, FireWire, PCMCIA, VGA-out, S-Video
OTHER HARDWARE 3-in-1 flash card reader
OS Microsoft Windows XP Home Edition
OTHER SOFTWARE Panda Antivirus, Ability Office 2002
SIZE 354x250x28mm
WEIGHT 3Kg



PCPlus ratings

ROCK PEGASUS TI

Value ●●●●●●●●●●
Features ●●●●●●●●●●
Performance ●●●●●●●●●●
OVERALL 8

were in the broadband wilderness?



INFORMATION

PRICE Free
SUPPLIER www.gimp.org
INFO www.gimp.org

REQUIREMENTS

CPU Pentium or equivalent
RAM 64MB
OS Windows XP, 2000, NT4

IMAGE EDITING

The GIMP 2



The improved interface makes The GIMP 2 more approachable and user-friendly.

installation process is still as fiddly as ever, and will take a little perseverance and a whole load of patience from the average PC user.

However, on installation, you immediately notice another key upgrade in the reorganisation of the interface. Instead of the mess of dialog screens, we now find a more intuitive grouping of dockable palettes. This provides an approachable and familiar method that will undoubtedly help new users to come to terms with how the software operates much more quickly than was previously possible.

Add to all these aesthetic improvements the fact that the underlying code driving the software has been dramatically improved, and we can start to appreciate The GIMP more as a stable and usable image-

editing application, rather than a quirky, Linux-based freebie. The available tools remain unchanged, although there have been some substantial developments to the Text tool, which finally retains editability.

The Paths tool also benefits from a new approach to creation and handling through various modes, as well as enabling the creation of open paths.

The GIMP may not rival the might of Photoshop, but in its class there's simply nothing to touch it. All the routine image-editing tools are available, along with access to more high-end features such as Levels and Curves, Channels (including Alpha Channels) and Mask support. There are various components and plug-ins that can be downloaded and installed to extend the core functionality and, being open source, you can always duck under the bonnet to tweak things yourself if you're that way inclined.

With the revised interface, improved stability, 'official' support for Windows and a price tag that's dependent only on download time, maybe you should be considering the benefits of obtaining your very own GIMP.

Chris Schmidt

PC Plus ratings

THE GIMP 2

Value N/A
Features
Performance
OVERALL 8

INFORMATION

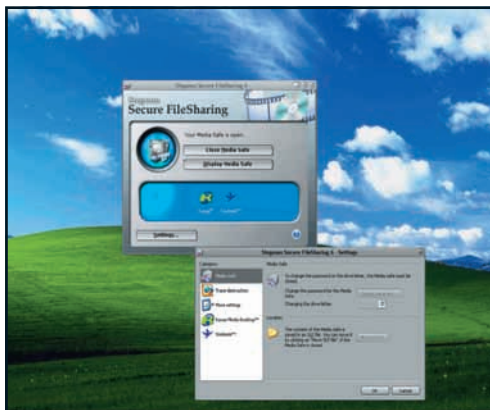
PRICE £25 (£20 ex VAT)
SUPPLIER Steganos 0800 7834 2667
INFO www.steganos.com

REQUIREMENTS

CPU Pentium or equivalent
RAM 64MB
OS Windows 98 or later

INTERNET SECURITY

Steganos Secure Filesharing 6



After initial set-up, this program simply runs in the background.

of Secure Filesharing 6, even if Steganos hasn't quite realised that this might be the obvious way to market it.

This tool won't hide your IP address from a prying record industry, but what it will do is destroy all

traces of what you've searched for and downloaded over Kazaa, Morpheus, eMule and SoulSeek, and safely lock it all in a secure, passworded virtual drive. It will also prevent other P2P users from sharing any files on your PC, as well as this being just plain selfish, it neatly sidesteps the recent claims that legal action will be brought against people sharing a certain number of copyright-violating songs, movies, programs and so on. Basically, unless they have your password, no one else

can find out what you've been legally or illegally helping yourself to from the leading file-sharing programs. This also clears traces of any content that you simply might not want anyone else in your household to know you've been downloading. Need we say more?

From what seems like a fairly pointless idea (and a tiny 8MB file) is born something surprisingly effective. Of course, blocking people from accessing your own digital media is entirely contrary to the core P2P ethos. Still, when there's this degree of illegality involved, it's hard to know whether to think of someone using this program as a hypocrite, or as recovering some of their respect for other folks' intellectual property.

Secure Filesharing is a doddle to set up and does most of its stuff in the background. It's just such a deeply niche product that it's very hard to know what to make of it. It will absolutely obscure anything you've used a filesharing program for from all eyes, so basically, whether you buy this tool really does depend on whether or not you have anything to hide.

Alec Meer

PC Plus ratings

STEGANOS SECURE FILESHARING 6

Value
Features
Performance
OVERALL 7

You all know the risks of peer-to-peer file sharing by now. There are all the viruses, all the adult content, the false files. It's a world of nastiness unless you know exactly what you're doing. Then there's the other risk – the headline-making risk. The Record Industry Association of America is going to get you. And, if you're a teenager, it'll sell you out to Apple and Pepsi and have your face shown on TV to advocate paid file sharing. This, we think, might be the major selling point

INFORMATION

PRICE £999 (£850 ex VAT)
DELIVERY £40 (£34 ex VAT)
SUPPLIER Tiny.com 01282 77 7555
INFO www.tiny.com
WARRANTY One year

SPECIFICATIONS

CPU 2GHz AMD Athlon 64 3200+
RAM 1GB
HDD 80GB (Toshiba 4,200rpm)
DRIVES DVD/RW (Matsushita UJ-815)
GRAPHICS 128MB ATI Mobility Radeon 9600
SCREEN 15in TFT LCD (1,400x1,050)
SOUND C-Media AC'97
SPEAKERS Stereo
COMMS 802.11b, 10/100 Ethernet, 56K modem
PORTS 4x USB 2.0, 1x FireWire, 1x PCMCIA, VGA-out, S-Video, Parallel
OTHER HARDWARE 3-in-1 card reader (MS, SD/MMC)
OS Microsoft Windows XP Home Edition
OTHER SOFTWARE Microsoft Office 60-day trial, Instant CD+DVD, PowerDVD
SIZE 328x274x37mm
WEIGHT 3.4Kg

ATHLON 64 3200+ NOTEBOOK PC

Tiny.com Mediabook MK64-3200+

By pitching its business like a low-cost airline, Tiny.com believes that it can carve itself a sizeable slice of the computing cake. But just as you wouldn't fly to Madrid in an old Lancaster bomber, Tiny.com can't compromise on the quality of its technology. So savings have to be made elsewhere – note the basic one-year warranty, the optional support packages, and the £1 per minute telephone helpline. Extended cover is available, but that will jack up the cost. In some ways, the price really is too good to be true.

This Mediabook MK64-3200+ has been built around a versatile Athlon 64 processor, running at a speed of 2GHz. While you'll get good performance from the 754-pin chip, the 32-bit Windows XP environment still doesn't show it off to its full potential. Nevertheless, with 1GB of RAM packed in, the Mediabook MK64-3200+ has the components in place to be capable of even better performance, either when Microsoft's 64-bit Windows OS appears, or if you opt to dump Windows for Linux.

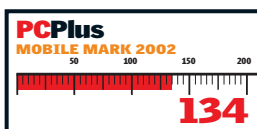
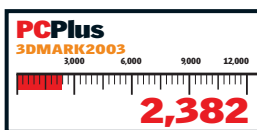
The rest of the specification isn't bad either. The 80GB Toshiba hard disk is deep and roomy, but it's only a 4,200rpm-rated drive. Alongside the HDD, you'll also find a Matsushita UJ-815 DVD/RW unit, a good all-round write and rewrite solution.

The 3DMark scores provide a demanding test of the Radeon M10 IGP, but a high-performance processor can often boost these scores. In terms of visual vigour, the Mediabook MK64-3200+ returned a score of 7396 in 3DMark2001SE. 3DMark2003, meanwhile posted a score of 2,382. It's worth noting, though, that the numbers here are lower than those recorded by laptops equipped with a Radeon 9600 chipset and a 3.2GHz Mobile P4 chip.

So while the Athlon 64 is certainly quick, it's not the fastest chip around. In



Love it or hate it, this black and silver 8555 chassis provides the Mediabook with some good expansion and connectivity options, including four USB 2.0 and a FireWire port.



PC Plus ratings

TINY.COM
MEDIABOOK MK64-3200+

Value	●●●●●●●●●●
Features	●●●●●●●●●●
Performance	●●●●●●●●●●
OVERALL	8

truth, a MobileMark score of 134 should be considered so-so at this level, although the battery retained power for 226 minutes, trumping similar P4-based machines by an hour-and-a-half.

The bulky black and silver 8555 chassis used here does enable the Mediabook to feature a wide array of extras. The 15in digital flat panel is spacious, supporting resolutions right up to a maximum of 1,400x1,050 pixels. We've seen better displays, with far better viewing angles than this. But at the low £999 inc VAT price point, the panel here is good enough for both business and multimedia use.

Running Windows XP Home Edition, Tiny.com also supplies a lightweight software selection with the Mediabook MK64-3200+. This is, however, notable for the trial of Microsoft Office included, an exclusive opportunity to use the 2003 editions of Word, PowerPoint,

Excel and Outlook for 60 days for free.

We've yet to see the Athlon 64 at its best; Intel's Mobile Pentium 4s have proved themselves to be more powerful, while its Pentium-M chips dominate thanks to their combination of swift performance and extended battery life. But these Intel chips don't have the longevity of AMD's 64-bit renegades, and this alone makes a machine like the Mediabook well worth a second look.

Priced at £999 inc VAT, this is a limited offer system, the availability of which has been extended to cover the period that this issue of PC Plus is on sale. If you're confident enough to ignore Tiny.com's inadequate after-sales provisions, this is a good opportunity to buy a next-gen system. Ring 01282 77 7555, and quote PC Plus, the June issue, and the name of the system.

Dean Evans

Thought you



VistaFrame VF-100



Lexmark X2250



PCPlus SUPERDISCS

→ The UK's best-value cover discs!

Sound data management is the key to good business, and we've got a collection of titles this month, to help you to achieve this



David Wiltshire
david.wiltshire@futurenet.co.uk

Managing a complex project? Sirid 1.18 Lite provides a number of tools to help keep your software projects under control. Making regular back-ups is vital if you want to keep your data safe from harm, and GRBackPro 3.0.300 keeps the hassle and tedium of backing up to an absolute minimum. When you're trying to analyse a problem for yourself, or describe a process to others, then drawing a picture, chart or diagram usually helps. WebPlanet Plan2002 handles just about everything.

Exclusive to this issue is a freeware toolkit. P2P file-sharing, simple back-up utilities, data recovery software and zip tools – they're all here!

The DVD offers even more content including Mandrakelinux 10.0 Community and MAGIX Movie Edit Silver. Enjoy!

Visit **pcplus.co.uk** and get thousands of **FREE** downloads!

→ www.pcplus.co.uk/downloads/default.asp

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PCPlus gives you more

Upgrade and save money

Save money on upgrades to the latest versions of our SuperDisc software



Complete SuperDisc listing

**DATABASE PROGRAM
SPECIAL EDITION**

UK-Info Disk V9 2004 SE

While there are a number of alternative ways of tracking down an old friend, or lost relative, none are as quick and easy as UK-Info Disk V9 2004 SE. It sends you straight to the source – the 2002 and 2003 Electoral Registers, with 79 million records on file.

**BACKUP TOOL
AS SOLD FOR £33**

GRBackPro 3

Never worry about losing your essential data with this handy tool. Making regular back-ups is vital if you want to keep your data safe from harm, and GRBackPro 3 keeps the hassle to a minimum.

**PHOTO MANAGEMENT
AS SOLD FOR £12**

Smart Pix Manager 5.5

Smart Pix Manager can bring order to your images. At its simplest the program is an efficient file viewer, displaying graphics, thumbnails and the currently-selected image all within the same view, but that's only the start.

**ENCRYPTION TOOL
AS SOLD FOR £17**

Secura Archiver 1.43

Whether it's financial information, personal details, user names and

CD 1

passwords or confidential company documents, your PC holds at least some data that you would like to keep private. For peace of mind you need an encryption tool like Secura Archiver.

**SYSTEM UTILITY
FREWARE**

Space Checker 5

Space Checker 5 is designed to help find space on your hard drive. Run the program, point it at a particular drive and then click on Scan. Leave the program to do its work, because checking every file on your drive could take a long time (although it's still far quicker than if you were to do it manually).

**SURVEY TOOL
AS SOLD FOR £29**

Quask FormArtist Presto 3.2

Whether you're running a club or thinking of starting up a business, it pays to know what people really think of your efforts. Creating a survey could be the answer, but most people get put off by the time and effort required. Try this excellent survey and feedback tool for all your polling needs.

**GRAPHICS PROGRAM
AS SO LD FOR £99**

Webplanet Plan2002

When analysing a problem, or describing a process to others,

CD 2

CD 3

CD 2

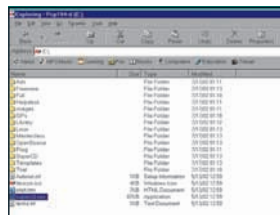
CD 2

CD 1

Using your SuperDiscs



1 Insert the SuperDisc into your CD/DVD drive and it will autorun. Read the terms and conditions and click OK to proceed, or Cancel if you don't wish to use the disc. If you click OK the interface will launch, enabling you to navigate the CD using the PCPlus custom interface.



2 If the SuperDisc fails to autorun after you've inserted the disc into your drive, simply run the program D:/SUPERDISC.EXE (D: being the DVD/CD drive, or other drive letter if appropriate).



3 The PCPlus SuperDisc is designed to perform at its best using Internet Explorer 5.5 (or above).

Technical Support

Got a problem with your SuperDisc?

CONTACT PC PLUS CD AND DVD READER SUPPORT

Email pcplus.support@futurenet.co.uk

Tel **01225 822 743**

Web site www.futurenet.com/support

Our support staff will do their utmost to help you, but cannot provide assistance for Linux or BeOS software, or extensive training on the software or on PC hardware, DOS or Windows.

Damaged or missing SuperDisc?

MISSING SUPERDISC If you bought this issue of PC Plus but did not receive the discs, then see your newsagent.

DAMAGED SUPERDISC If in the unlikely event your cover disc is faulty, please call our reader support team on **01225 822 743**



David Wiltshire
david.wiltshire@futurenet.co.uk



<http://forum.pcplus.co.uk>

David is responsible for sourcing the best programs each month on our fantastic SuperDiscs

drawing a chart or diagram usually helps to make things clearer. That's where WebPlanet Plan2002 can help, with flowcharting, graphics and more at your disposal.

TASK MANAGER
AS SOLD FOR £66

Sirid 1.18 Lite

Programming can be fun, but not necessarily easy to manage, especially when you're dealing with complex projects. Sirid provides a number of tools to help keep your software projects under control.



DATA MANAGEMENT TOOLKIT

Back it up 5.1.4.107
CDBurnerXP Pro 2.2
Cobian Backup 5.2.1
Easy-Backup 1.03
ERUNT 1.1a
Handy Backup 2.1
Handy Recovery 1.0
ICE Mirror 1.1
NTFS Reader DOS Boot Disk
PC Inspector Clone Maxx
PolderBackup 2.7
Restoration 2.5.14
RKopie 2.5
Simply Safe Backup 2004
Free Edition 1.92
Visual CD 1.8
ZipGenius 5.5.1.310

TRIAL SOFTWARE

Absolute Startup 4.1
Antiy Ghostbusters
Professional Edition 4.38
Astrum InstallWizard 2.02.7
Complete Registry Cleaner 2.0.2
Defragmenter Pro Plus 3
GRBackPro 5.4
Opinio 4.3.2
PDF-XChange Pro 3.10.0047
Smart Pix Manager 7.03
Surveyor 3.27
Time Meter for Microsoft Outlook (2000/XP/2003) 2.4



AUDIO EDITOR
AS SOLD FOR £22

Dexster 1

Audio editors can be intimidating, especially if you don't know your band pass from your high shelf. Dexster has a good mix of features, though, and even starters will find it has plenty of uses.



EDITING TOOL LIMITED EDITION

MAGIX Movie Edit Silver

Give your home movies the professional touch with this powerful video editing system. Easy to use but bursting with features, it's got everything you need, and makes a refreshing change from standard PC video editors.

ESSENTIAL RESOURCES

MySQL 4
PHP 4.3.5
Apache HTTP Server 2.0.49
Mozilla 1.6
Mozilla Firefox 0.8
Netscape 7.1
Opera 7.23
Adobe Reader 6
RealOne Player 2
Flash Player 70.14
Stuffit Expander 8
WS_FTP Pro 8

ESSENTIAL OPENSOURCE

7-Zip 3.13
Abbot Java GUI Testing Framework 0.12.3
AppServ 2.3.0
AWStats 6
FileZilla
PhpDocumentor 1.3
singapore 0.98 beta
TurboPower Abbrevia 3.04
TurboPower OnGuard 1.13
Ultr@VNC 1.00 Release
Candidate 11d

ESSENTIAL FREeware

AceMoney Lite 3.4.4
All-in-One Secretmaker 3.8.5
BootSkin 1.05
Buzz 3D FreeChat 1.04 1-to-1
Video Conferencing
cam2pc Freeware Edition 4.1
CheckP3 4.4
Deleted File Analysis Utility
DustBuster 2.8
Emsa DiskCheck 1.0.57
Enigma Firewall 1.1
NetworkActiv Web Server
POP Peeper v2.3
PopStopXP-Free 2
Signature995 4.3
StudioLine Photo Basic 2.1.6
Sys Aid Server 2.0.2
WinGuard Pro 2004 Free Edition 5.6.68

ESSENTIAL LINUX

Argus 3.3_RC-20040217
Audacity 1.2
Evolution 1.5.2
Group-Office 2
K3b 0.11, Kino
Komics 1.2
Subversion 1.0
The GIMP 2.0pre4
Unison

PROGRAMMERS' WORLD

C# Masterclass
C++ Masterclass
Delphi Masterclass
VB Masterclass
Wilf's Workshop

PLUS...
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DVD EXCLUSIVE	
Magix Movie Edit Silver	219

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FULL PROGRAM
SPECIAL EDITION

UK-Info Disk V9 2004 SE



REQUIREMENTS



Windows 98 or later,
160MB disk space

SKILL LEVEL



4 INTERMEDIATE
Fractionally more difficult
than using Google, but
that's about it

SERIAL CODE



Not required

INFORMATION

SUPPLIER i-CD Publishing
INFO www.192.com

Track down old friends and distant family members (or just retrieve a forgotten address) with the ultimate UK database

While there are a number of ways of tracking down an old friend, or lost relative who never got round to returning your CDs after university, none are as quick and easy as UK-Info Disk V9 2004 SE. Instead of wasting hours running random web searches and digging through outdated numbers and red herrings, it sends you straight to the source – the 2002 and 2003 Electoral Registers, with 79 million records on file.

Getting started

Installing UK-Info Disk is straightforward

enough. One blank Setup screen asks you to select the components that you want to install, but you can safely ignore this – everything that you need will be copied across automatically. Reboot your PC when asked and you'll be ready to launch UK-Info Disk from the Start menu.

Of course, the best place to begin is with a straightforward search. Type a surname – Smith is traditional, but you'd be best off thinking of something slightly less popular – into the Surname box and pick an initial to help zero in on the exact person that

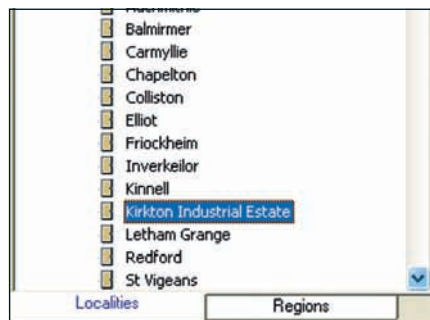
you're looking for. Additional flexibility can be found by entering a Locality – the part of the country that you expect to find this person. While the disc is bursting with information for the whole country, you have to specify a specific area when searching in this special edition. You can choose a town or county from the same Localities tab, or opt for a more general region such as 'North West'.

Once you've filled in all the search fields, the Start button will become active. Click on it, or select Search/Start and within moments you'll see all

Search the UK from your desktop



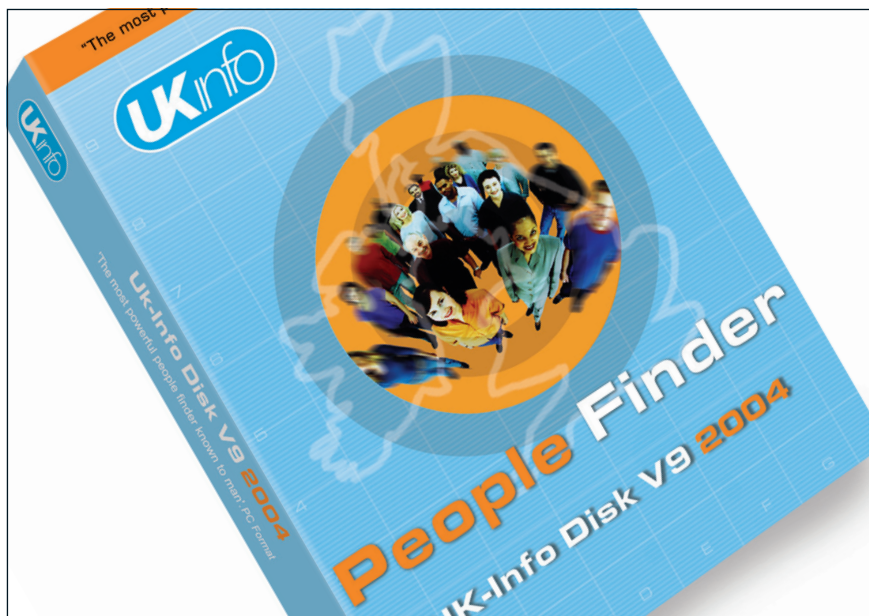
1 To begin searching for someone, type their name in the UK-Info Disk V9 2004 SE Surname box. Then use a wildcard. Hodes* would match Hodeson and Hodesdon, for instance. Or browse the list of every allowable surname in the Index box (an interesting selection in itself).



2 'United Kingdom' is displayed by default in the Locality box, but UK-Info can't do a countrywide search for your name. Instead you need to specify either a locality or region, using the tabbed dialog at the bottom of your screen. Add the first three characters of a postcode, if you know it.

Title	Surname	Forename	Disc No	House Name	Street Name	Telephone
1992	Mr	Thompson	Henry J H	144	Richmond Hill Approach	
1992	Mr	Thompson	Robert W	145	St Andrew Street	
1992	Mr	Thompson	Heather	75	David Graham	Pulchra Oak Road
1992	Mr	Thompson	Helen	113	Valley Close	
1992	Mr	Thompson	Helen M	77	Abbots View	
1992	Mr	Thompson	Helen L	51	Oaktree South	
1992	Mr	Thompson	Heather	86	Star Lane	
1992	Mr	Thompson	Helen J	39	Brook House	High Street
1992	Mr	Thompson	Henry G	26	Dolphin Road	
1992	Mr	Thompson	Henry	57	Stone Road	
1992	Mr	Thompson	Harold C	15	Widdie Avenue	
1992	Mr	Thompson	Heather C	113	Stable Crescent	
1992	Mr	Thompson	Helen C	53	Melton Central	Navigation Causeway
1992	Mr	Thompson	Harold M	126	College Road	
1992	Mr	Thompson	Harold L	10	Fine Road	
1992	Mr	Thompson	Harold	2	Karrington Avenue	
1992	Mr	Thompson	Harold E	15	Larkins Close	
1992	Mr	Thompson	Hugh C	52	Hillside Avenue	
1992	Mr	Thompson	Helen	35	Oak	Forest View
1992	Mr	Thompson	Helen J	25a	Longton	Shenwood Way
1992	Mr	Thompson	Harold P	88	Easton Way	
1992	Mr	Thompson	Helen	25a	Marshall Road	
1992	Mr	Thompson	Harold M	57	Potterfield Close	
1992	Mr	Thompson	Harold J		Falcon Road	

3 Click Start and in a second or two (longer with a wildcard search) UK-Info 2004 will display all its matching records. Which is fine (as long as there are some), except you'll probably have too many fields to display on the screen without much horizontal scrolling. Fortunately this is easy to fix.



If you can't find it in stores, at least you should be able to find someone to ask!



Upgrade to the full UK-Info 2004

Want a host of powerful new search features, and no restrictions at all?

Upgrade UK-Info V9 2004 SE to the Standard Edition and you'll be able to search nationally for business as well as residential records, each with phone and map information, and up to 2000 records per search. Gain full flexibility with the Professional edition, which enables you to track down businesses by name, find people by nicknames (such as Mike standing in for Michael) and even perform relationship searches to find Mary Smith, who you know was living with Peter Green. Even better, we're offering 25 per cent off the regular prices, so UK-Info Disk V9 2004 now costs only £37, while the Professional version is £209. Call the freephone sales hotline on 08000 192192 to place your order, quoting 'PC Plus Offer'.

www.192.com

matching records up to a maximum of 30. If there are more than this on record, consult the number at the bottom right to see how many have been omitted. The upgraded version of UK-Info displays 200 results per page, and you can accumulate results up to 2000 records. On the positive side, if you have thirty to work through, it's likely that you need to be more specific in any event. Try adding your subject's first name, if you haven't already, or use a smaller area to make sure that you're seeing every relevant record that UK-Info Disk has to offer.

Searching secrets

In an ideal world you'd get just one record returned for your first search, pointing at the exact person you're looking for. Unfortunately, most of us don't have this luxury, and it's highly likely that you'll need to rework your search using a set of wildcards, other special characters and variations on a theme. Are you searching with

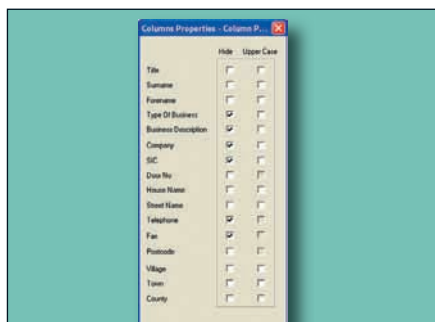
the surname Jamieson, when it should be Jameson? Or Jamson? Use the * character as a wildcard, so that entering JAM*N will find any names starting with 'Jam' and ending with 'N'. You'll have to be patient doing this however, because wildcard searches inevitably take a little longer. (But be patient, because wildcard searches take a little longer).

It's possible that you're searching for a very common name, and hit the 30 record limit no matter what you do. One reason this might happen is that UK-Info Disk returns any records that start with the details you enter, so a search for 'Smith' will also return names like 'Smithson'. If this proves to be a problem, enter a ^ character after the surname (Smith^), and UK-Info Disk will only provide results that match your chosen criteria, and will use that criteria exactly.

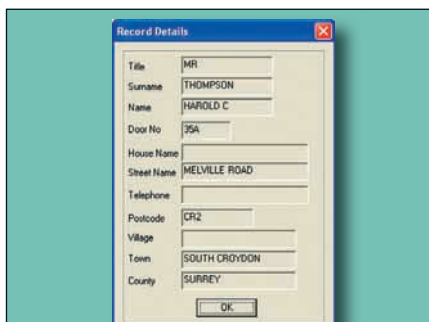
With any luck, these searching tricks will produce a manageable set of records, which you can investigate

further. If one hit looks more promising than the others, then double-click it to read the full details (or select Details from its right-click menu). Alternatively, choose any records that could match your person (click Edit|Select All to get the lot), then select Edit|Copy to send them to the clipboard. Now you'll be able to paste them into a spreadsheet or word processor, to print or save for future reference. With almost everyone in the UK available, you won't run out of choice in a hurry.

It's amazing what you can do with UK-Info Disk, but don't worry if you're concerned about other people returning the favour. To have yourself removed from the main database, open up the application and visit Data CSources and Coverage in the help file. Alternatively, hit the web and download the official notification form at www.192.com/downloads/C01.pdf and follow the instructions on the top. It's a small world after all, but now you can bring it firmly under control. **PCP**



4 Right-click on the grid and select 'Properties'. This displays the Column Properties dialog, where you can hide fields that aren't necessary. At a minimum you can get rid of Telephone and Fax number, as they're always blank in the SE version of Info-UK 2004. Click OK when you're happy.



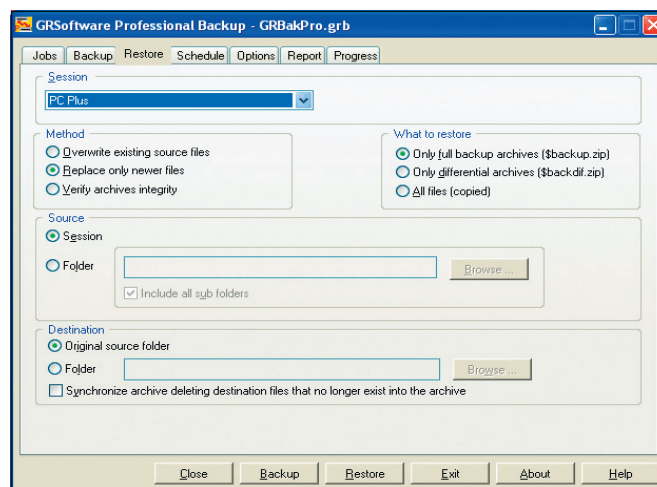
5 Look down the list and you might find the person you're looking for immediately. If so, double-click it to view the Record Details screen, containing the full name, address and postcode. You won't see a telephone number, though – that's not provided in the SE version of UK-Info 2004.



6 Not sure which record is correct? You'll need to investigate the results further. There's no way to directly print or save the records, but you can copy them to the clipboard (Edit|Select All, right-click the table and select Copy). Paste the comma-delimited records into the app of your choice.

FULL PROGRAM AS SOLD FOR £33

GRBackPro 3



Protect your data from viruses or hardware failure with this tool, which enables you to create easy, scheduled back-ups

REQUIREMENTS



Windows 98 or later,
1MB disk space

SKILL LEVEL



4 INTERMEDIATE
It's much the same as
standard back-up tools

SERIAL CODE



Not required

INFORMATION

SUPPLIER GRSoftware
INFO www.grsoftware.net

RESTRICTIONS



None

If you believe Microsoft, it's vital that Windows should include an integrated browser, while an essential tool like Microsoft Backup is relegated to a little-known folder on the Windows XP CD. These may be Microsoft's priorities, but you can have your own. Making regular back-ups is vital if you want to keep your data safe from harm, and GRBackPro 3 is the ideal way to keep the hassle and tedium of backing up to an absolute minimum.

Setting up your back-up involves defining a number of 'jobs'. Each refers to an individual folder (and subsequent subfolders), and will then back up the specified files. Within each job it's also possible to specify folders to skip, and file types to exclude. Planning this takes a little while, but jobs are saved so that you only have to do it once.

By default GRBackPro runs an incremental back-up, only saving files that have changed. You can optionally

ask for a full back-up, or to save only files that have the archive bit set. There's also the option to 'Synchronize archive with source folder', so that renaming a source folder will result in the same change in your archive.

Zip Compressor Level is another setting to watch. GRBackPro will normally save space by saving your files in ZIP archives, with a compression level of 6. We would recommend increasing the level to 9, reducing the file size even further without taking much more CPU time.

Once you've set everything up properly, click on Backup to begin archiving. Or, if you prefer an easy life, switch to Schedule and set the back-ups to run automatically. At night is best, but daytime could work too. If you go for that, use the Low Process Priority setting under 'Options' to make sure that your back-ups don't interfere with your regular work. **PCP**

£
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SAVE
£££s

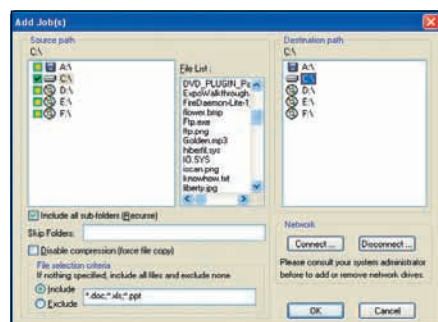
Upgrade to GRBackPro 5

Get even more flexibility with the very latest in back-up software

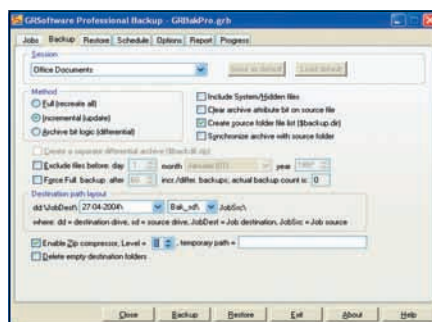
The new version of GRBackPro 5 supports backup to DVD and CDs (packet write drivers required), and can now run as a Windows Service. PKZIP 2-compatible archives are supported, or you can choose to back up files without compression. If it sounds like the solution for you, then order the program for \$59 (around £33).

www.grsoftware.net

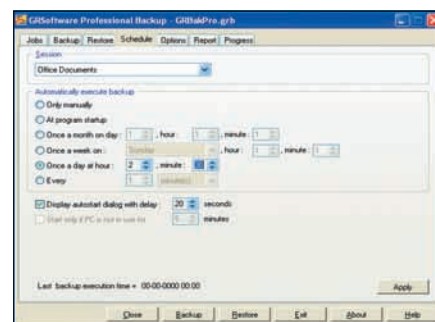
Keep your most important documents safe



1 Click JobsNew and call this back-up session 'Office Documents'. Now click Add to create a job within this session. Select your root folder as the Source path, and choose 'Include all sub-folders'. Next choose 'Include', and specify the file extensions to back up: *.doc;*.xls;*.ppt. Finally, pick a Destination Path and click OK.



2 Now switch to the Backup tab, where you can alter various settings related to this session. It might be useful to exclude files created before a date you specify, so that you don't gather up absolutely everything. It's definitely worth increasing the ZIP Compressor Level to 9, for maximum file compression. Switch to the Schedule tab when you're finished.



3 You could click on the Backup button now, and all the specified files would be saved. Backups are something you'll want to do regularly, though, so it's best to automate the session by setting up a schedule. Choose 'Once a day at hour...' at, for instance, 4am, to run it at night, then leave GRBackPro active in your system tray.

FULL PROGRAM AS SOLD FOR £12

Smart Pix Manager 5.5



Is it high time you got your digital holiday snaps organised? Manage your photos (and other files) with this versatile tool

REQUIREMENTS



Windows 98 or later,
5MB disk space

SKILL LEVEL



4 INTERMEDIATE
No special skills or
knowledge necessary

SERIAL CODE



[www.xequote.com/offer/
pcp-spm-5](http://www.xequote.com/offer/pcp-spm-5)

INFORMATION

SUPPLIER Xequote
INFO www.xequote.com

RESTRICTIONS



None

Browsing through your old photos used to be so easy. Step 1: go to the bookshelf. Step 2: take out appropriate album, according to the label on the spine. Step 3: open and enjoy.

The digital equivalent is trickier. You start by browsing My Pictures, and wishing you had categorised your photos more carefully. Then you peer at tiny thumbnails to find the images you want, or yawning as you wait for Explorer to slowly display them.

It doesn't have to be this way, and Smart Pix Manager can bring order to your images. At its simplest, the program works as an efficient file viewer, displaying graphics, thumbnails and the currently-selected image all within the same view. It's all very easy to use.

But then you might come across a photo you want to view again later. Should you make a copy in a temporary folder somewhere? There's no need –

just right-click on the image and select Bookmark. Click the Bookmark tab later to view (and work with) all your bookmarked images in one place.

It would be much easier if you didn't have to manually browse for images, of course, and Smart Pix Manager can help here too. It's possible to assign multiple keywords to a photo, making it much easier to find later on. You can also add a text description to any file you like. It becomes easy to find your photos, and Smart Pix Manager can also display them in a slideshow, print thumbnails, or create an HTML thumbnail gallery for your website.

Other features enable you to perform simple image processing tasks, such as resizing and cropping pictures and adding captions. There's also support for handling audio, video and text files, so you can edit the tags of MP3 files. Install the program for yourself to find out what else it can do. **PCP**

£
**UPGRADE &
SAVE
£££s**

Upgrade to Smart Pix Manager 7

More formats, more search options, more editing features – less money

The latest version of Smart Pix Manager features an improved user interface, expanded thumbnail support for more file formats, better web page creation, batch renaming and a whole lot more. Normally £19, it can be yours for only £11. And that's not all – for this offer, and big discounts on other Xequote products, visit www.xequote.com.

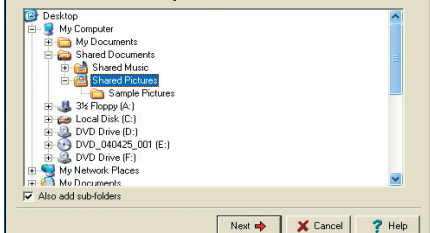
www.xequote.com

Catalogue your digital photo collection

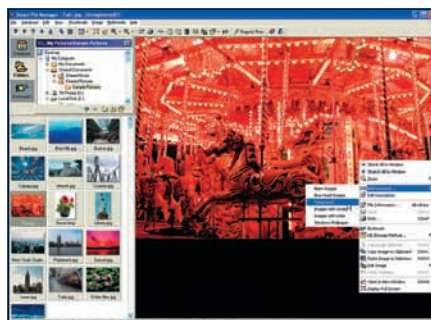
Add Files to your Database

This tool will allow you to add files to your database by scanning the folders on your computer

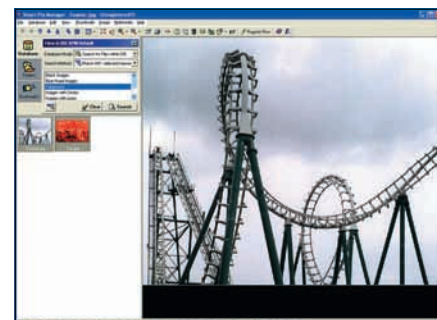
Please select a folder to add to your database:



1 Smart Pix Manager works by building a database of the files you want to catalogue. Which files? That's up to you. Select Database/Add Files to DB Wizard, then specify a start folder and the formats you want the program to use. It'll scan your system, locate any matching files and populate the database.



2 Now add keywords to categorise your photos (places, people, dates and so on). If the keyword window isn't visible click View/Flyover Tools/Keywords | Edit Keywords to display it, then 'New Keyword' to start entering them. Categorise images by right-clicking on them and selecting 'Add Keyword'.



3 Click on the left-hand Database tab to see what you've done so far. Select 'Show Files' without Keywords to see any that still need categorising, for instance (you can view and add keywords from this window, too). To carry out a search, choose 'Search for Files within DB' and double-click on the keyword of your choice.

**FULL PROGRAM AS
SOLD FOR £17**

REQUIREMENTS Windows 98 or later, 2MB disk space

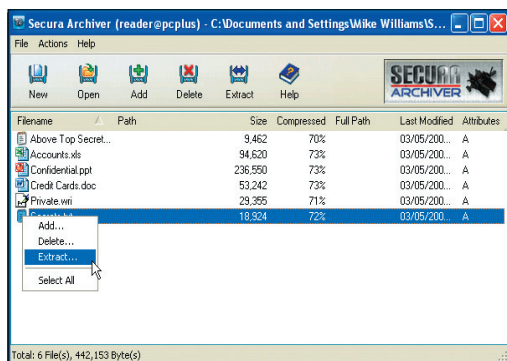
SUPPLIER Perception

INFO www.cmfperception.com/securaarchiver.html

SERIAL CODE Use the email reader@pcplus and code 1322472906702921407

Secura Archiver 1.43

Use the toolbar or right-click context menu to manage the files in your secure archive.



Use industry-strength encryption to protect your data

Whether it's financial information, personal details, user names and passwords or confidential company documents, your PC probably holds at least some data that you would like to keep private. But what if the worst happened and it was infected by a Trojan, or stolen, tomorrow – could you guarantee that your secrets would remain safe?

For real peace of mind you need an encryption tool like Secura Archiver. It looks and works like many ZIP archive tools, letting you drag and drop files or folders and compressing their contents. But, when you click 'New', it also presents an option to 'Encrypt Archive', which uses the industry-standard 128-bit Blowfish algorithm to keep your data safe. Even if someone does gain access to your files, they won't be able to read them.

At least, that's the theory. The reality is that any password-based security is only as good as the password you choose. If you're the kind of person who uses something obvious, and enters the same password whenever you're asked for one, a little more help will be required – which is exactly what Secura Archiver provides.

As an alternative to passphrases, the program can generate a 26-character security key from the random movements of your mouse (choose Encrypt Archive/Encrypt with Security Key/Select Key/Generate Key to get started). It's fast and easy, and no-one's going to guess the end result in a hurry (or ever, for that matter), so your confidential data will remain safe from potential hackers and thieves. **PCP**

Upgrade to Secura Backup

Use Secura encryption technology on your back-ups

Secura Backup includes the powerful data compression and encryption feature of Archiver, along with back-ups to local and network destinations, over FTP or via email. There are 27 predefined filesets to easily save your email, browser favourites, and more. The price is £45, 20 per cent off the regular price. Visit www.cmfperception.com/pcplus to place your order.

www.cmfperception.com

FREWARE

REQUIREMENTS Windows 98 or later, 3MB disk space, .NET Framework

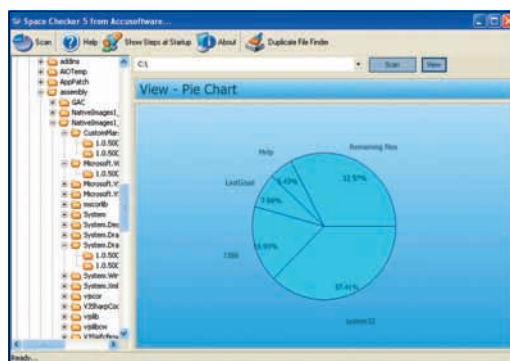
SUPPLIER Accusoftware

INFO www.accusoftware.co.uk

SERIAL CODE Not required

Space Checker 5

Choosing a Graph view makes it easy to see where all that drive space has gone.



See where all that free disk space has gone, and reclaim it

Every time you buy a new PC it comes with a hard drive that's two or three times bigger than your old one. "I'll never fill that", you think, but a few short months later you're starting to have second thoughts. Somehow the drive got to be 75 per cent full without you even noticing. How did that happen?

Space Checker 5 is designed to help you answer this question with the minimum of fuss. Run the program, point it at a particular drive and then click on Scan. Leave the program to do its work, because checking every file on your drive could take a long time (although it's still far quicker than if you were to do it manually).

Once finished, you'll have a table showing every folder in your root drive, and the disk space it's consuming (both in megabytes and as a percentage of the total). Click on the 'Size' column header to sort by disk space, and select View to see a pie or bar chart of the data.

To find out more about a particular folder, simply select it from the left-hand tree. Space Explorer will scan its subfolders, helping you to locate the space-hogging files.

Space checker isn't just about reports, however. Select 'Duplicate File Finder' and, unsurprisingly, it will find duplicate files. It's surprising how much space these can take up, but be careful. Deleting system files such as DLLs can have unexpected effects, even if you have copies elsewhere, so think before you start removing the duplicates. **PCP**

Get your hands on more Accusoftware products

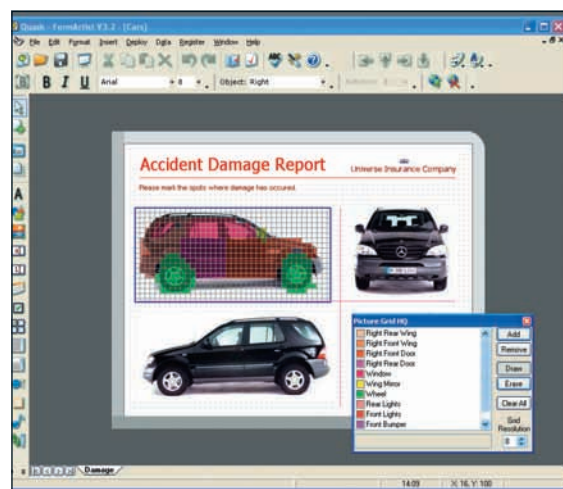
So what else do the Space Checker authors have to offer?

Accusoftware specialises in business software, and it has some powerful programs to offer. There's a group text messenger for sending out high-volume SMS messages, a server admin tool, out-of-the-box intranet solutions and a whole lot more. For more information, downloads and online demonstrations visit the website at www.accusoftware.co.uk.

www.accusoftware.co.uk

FULL PROGRAM AS SOLD FOR £27

Quask FormArtist Presto 3.5



Want to know more about your customers or employees? Build web forms and online surveys – no prior knowledge required

REQUIREMENTS



Pentium, 32MB RAM,
Windows 95 or later

SKILL LEVEL



7 INTERMEDIATE
Lots to learn, but it's all relatively straightforward

SERIAL CODE



Visit www.quask.com/ purchase, select the 'purchase' button for FormArtist Presto and enter PCPLUSUK in the Coupon field

INFORMATION

SUPPLIER Quask
INFO www.quask.com

RESTRICTIONS



None

Whether you're running a club, thinking of starting a business, or already managing your own company, it pays to know what people really think. Listening to customers, and collecting feedback from employees will lead to better business decisions. Creating a survey could be the answer but most people get put off by the time and effort required. That's where Quask comes in with its feedback and survey tools.

FormArtist provides sample forms which you can customise, or use immediately. These are much more than text-based multiple choice questions, as they all make great use of colour and graphics.

If you can't find what you want, FormArtist Presto comes with a selection of pre-defined form styles. Choose one of these, use 'what's a form wizard' to complete your design, then add questions and text in the right groups.

For maximum control, start with a blank page and slot in any details you need. If you're after more sophisticated surveys, you can use scripting for conditional branching, fade and move objects, validate entries and lots more.

Once you've finished, FormArtist Presto can deploy the form to your web server. It can be embedded into an existing web page, or displayed as a pop-up window. Either way, it'll run on most PHP or ASP web hosts (no database is required), and it's compatible with just about any browser. You'll automatically have the data from filled-in forms sent back to you by email. The program can then create reports and statistics on the results.

Despite the impressive and lengthy feature list, FormArtist Presto is very easy to use. Use the sample files, browse 'Getting underway' in the Help file, and you'll soon be a feedback, survey and polling expert. **PCP**

£
UPGRADE &
SAVE
£££s

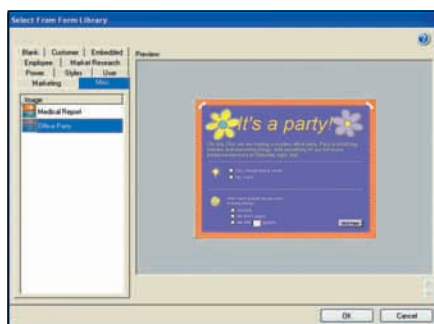
Upgrade to FormArtist Standard/Pro

Save big money with our special upgrade offers

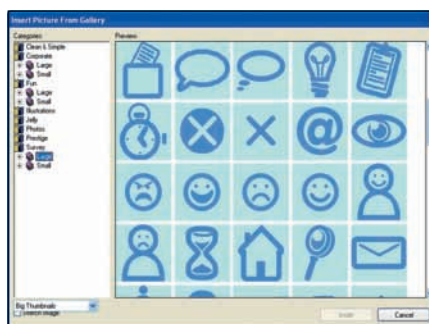
FormArtist's more powerful cousins include goodies like a spell checker, direct JavaScript support, and lots more (see www.quask.com/en/products_features.asp). We're offering FormArtist Standard for £79 (£30 discount), and FormArtist Professional for £269 (a chunky £180 off). To claim your discount, use the coupon code PCPLUSUK at www.quask.com/purchase. Don't hang around – the offer only runs until 20 August 2004.

www.quask.com

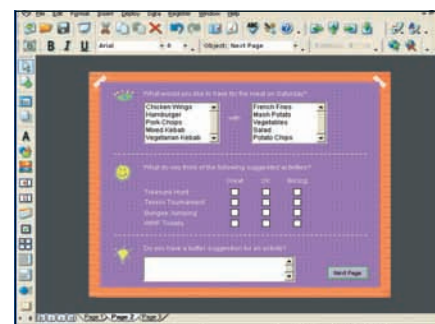
Create stylish Web forms in minutes



1 Launch FormArtist, and choose Design from the Start Wizard. Select the 'Using a ready-made form' option, and browse through the library options. Some are very specific, such as 'Wine Seller' and 'Software Shop', while others just define a general look – these can be found under the Styles section. We've picked 'Office Party' from the 'Misc' section.



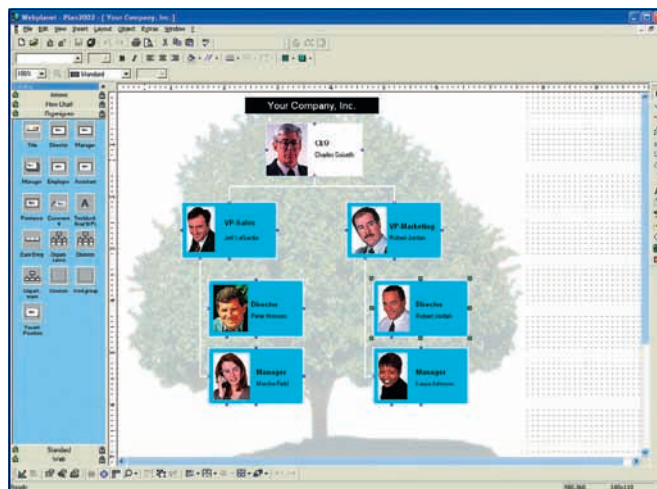
2 Give the form a name, like 'Party', and it will appear in the form designer ready for customisation. If you want to add some buttons or sidebars, click InsertObjects from Library, and choose from the selection on offer. Or if you're just looking for a graphic or two, try the Clipart in InsertPicture from the Gallery selections.



3 Use the tabs at the bottom of the screen to switch between the forms pages. Use InsertNew Page to add another, or EditDelete Page to remove one. If you simply want to tweak some element on a particular page, right-click on it and select Properties to see what's available. Choose Deploy/Deploy Form to put it online.

FULL PROGRAM AS SOLD FOR £99

Webplanet Plan2002



Need to get organised? You need flowcharts, forms, diagrams and charts – this flexible graphics program does them all

REQUIREMENTS



Windows 98 or later,
11MB disk space

SKILL LEVEL



6 INTERMEDIATE
If you've ever used a charting program you'll know what to expect

SERIAL CODE



[www.webplanet.com/
pcplus.html](http://www.webplanet.com/pcplus.html)

INFORMATION

SUPPLIER Webplanet Corporation
INFO www.webplanet.com

RESTRICTIONS



None

Drawing a chart or diagram helps to make things clearer if you're analysing a problem, or describing a process to others – and WebPlanet Plan2002 can help.

Open the program's Flow Chart catalog and you'll find all your charting options. Drag and drop from the table of symbols, double-click on one and start typing to add some text. The Connector tool can then be used to join them together.

Flow charting is only one aspect of Plan2002. The other catalogs provide many other symbol groups. The oddly named Organigram contains everything needed to produce basic organisational charts, which you can build manually, or customise the samples (just add names, titles and perhaps a picture).

The Web catalogue provides another set of Internet symbols, handy if you're charting a complex website. Click File/Open Catalog and then browse to

\Plan2002\Catalog for more examples, including a Family Tree.

In addition there are plenty of advanced features available for expert users. Charts can have different layers, for example. You can add graphics, OLE Objects or tooltip text to any box within a chart, or group several symbols together. Any symbol on the chart can have an associated URL, and the whole thing can be exported as a web page when you've finished.

There's plenty of charting power, but it's still a small part of what Plan2002 has to offer. Open a catalog like Business Forms and you'll find pre-built templates for mileage sheets and fax headers. Alternatively open Family Forms to find a few sign templates ('Fresh Paint', 'For Sale' and so on). Adding basic desktop publishing to the mix puts Plan2002 ahead of the competition, truly offering something for everyone. **PCP**

£
UPGRADE & SAVE
£££s

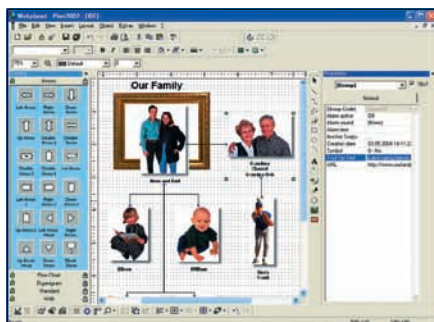
Upgrade to Webplanet Concept X7

Say hello to the next generation in charting tools

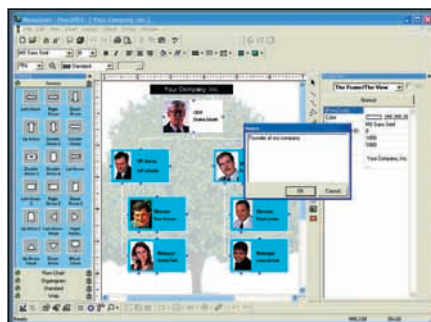
Webplanet's latest program includes business goodies like a virtual flip-chart, ready-to-use business meeting forms, project plans, a large intelligent symbols base with built-in yes-no logic, rich format notes editor, audio recorder and more. It's fully Tablet PC-enabled, and you can upgrade for only £100 (£67 off the regular price). The offer expires August 31st 2004, though, so make sure to head for www.webplanet.com/pcplus.html before then.

www.webplanet.com

Advanced Charting with Plan2002



1 Some diagrams, such as family trees, use one box or picture to represent a lot of information. One method of conveying this is to double-click on a box and type a little key information into the 'Tool Tip Text' box. When the viewer leaves the mouse cursor over this box, they'll see whatever you've entered.



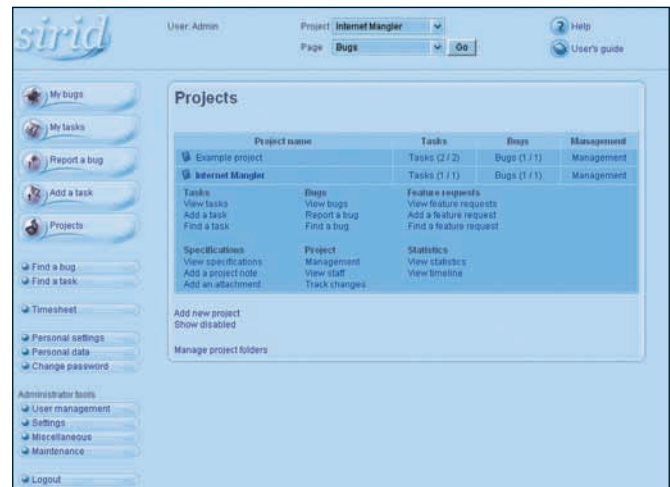
2 Tool tips can only hold a small amount of info, so for more details you should use the Sticky Notes tool (fifth from bottom on the Object toolbar, to the right of your screen). Choose this, and then type in your text notes. Click OK and a new icon will appear on the chart, acting as a clickable link to the notes.



3 Not enough space? Use the URL property of one symbol to point at another chart or diagram (or any other file you like). To test this out, select File/Save As Website and specify an HTML file name for your work. If it contains lots of graphics, use the JPEG Adjust tool to reduce the graphics file size.

FULL PROGRAM AS SOLD FOR £66

Sirid 1.18 Lite



Take control of your projects with this combination task manager and bug tracker from Thraex Software

REQUIREMENTS



Windows 98 or later,
Sun Java 1.4 or later,
30MB disk space

SKILL LEVEL



5 INTERMEDIATE
Sirid is one of the more straightforward project managers available

SERIAL CODE



Visit www.sirid.com/shop/pcpluscampaign.jsp and use the code pcp218_sirid

INFORMATION

SUPPLIER Thraex Software
INFO www.thraexsoftware.com

RESTRICTIONS



None

Programming can be fun, but this doesn't mean it's easy – especially if you're managing a complex project. Spend too much time on the interesting stuff, adding features that you don't need, and before you know it the program will be running late and over budget.

Sirid provides a number of tools to help keep your software projects under control. You can start by designing a specification within the program's own HTML editor, or by creating one elsewhere and attaching it as a document. Then it's time to break the project down into individual tasks, and assign them to individual members of your team. Sirid provides a web server, enabling users to access project information from your network, or across the Internet, using a browser.

Allocate the amount of time you expect each task to take, and you'll get a better understanding of the project's

complexity. Detailed project statistics aren't available in this version, but there is a time-sheet feature for tracking the activity of members of your team. Team members can log in and view their assigned work in the My Tasks page. When work is finished, change the Task Status to Done and Sirid will send an email notifying the project manager. The task may not be as complete as the programmer thinks, of course, and your testing may reveal plenty of bugs. These can be assigned to team members, too, who can view the bad news on their My Bugs page.

This powerful and versatile project-managing system runs using Sun Java 1.4.0 or later, which is downloaded during installation if you don't have it already. If you need to run applets that only work in Microsoft's implementation of Java, clear the Internet Explorer setting at Control Panel\Java Plug-in\Browser. **PCP**

£
UPGRADE & SAVE
£££s

Upgrade to Standard or Pro

Get rid of all limitations with two high-end versions

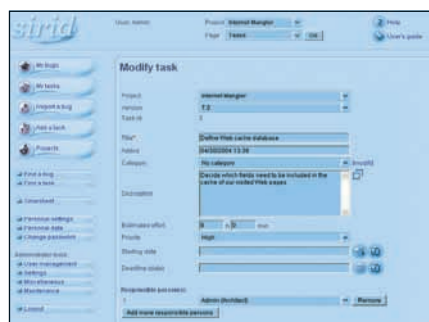
Sirid Lite comes with a few limitations that you won't see in the high-end versions – see www.thraexsoftware.com/sirid/comparison.html for details. We're offering Sirid Standard for \$90 (around £50) – that's a discount of around £61. Order online at www.sirid.com/shop/order.jsp?productid=173174. Alternatively you can buy the Professional version and save 20 per cent (\$340, or around £190) at www.sirid.com/shop/order.jsp?productid=173175.

www.sirid.com

Perfect project management



1 Launch Sirid and you're prompted to enter a log-in name and password (use Admin for each at your first logon). That's not exactly secure, so click 'User Management' and change the password immediately. Next, select 'Add New User' and enter the details of your other team members (their log-in name, password, email address and so on).



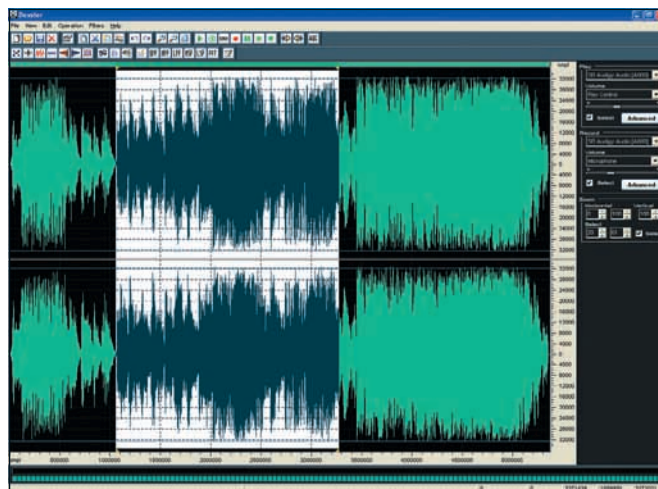
2 Now you need to click Projects\Add New Project and enter the name of the project you'll be working on. Choose View Specifications\Add Project Note when you want to start defining your application. Who will be working on the project? Inform the program at View Staff\Add Staff Member, and you can start assigning your project tasks.



3 Finally, assign each task to a different user, and when they log in there will be a personalised list under 'My Tasks'. Once a task has been completed, users will view it. Select 'Change Status' and mark it as Done. If your testing reveals that it's not done at all, simply select 'Report a Bug' and give them the job of fixing it.

FULL PROGRAM AS SOLD FOR £22

Dexster 1



Take control of your MP3 and WAV files with this powerful utility which enables you to convert, mix, edit and generally have fun

REQUIREMENTS



Windows 98 or later,
1MB disk space

SKILL LEVEL



4 INTERMEDIATE
A basic understanding of
audio editing will help

SERIAL CODE



Not required

INFORMATION

SUPPLIER Softdiv Software
INFO [www.softdivshareware.com/
audioeditor.html](http://www.softdivshareware.com/audioeditor.html)

RESTRICTIONS



None

Audio editors can be a little intimidating, especially if you don't know your band pass from your high shelf. Dexster makes it easy, with a huge mix of features that anyone can use.

If you've got a WAV file that you want to convert to MP3 just open in one format and save it out in the other. You can also reduce the sample frequency of a file, cutting its size. Dexster works just as well as a recorder, saving whatever you're listening to as a WAV or MP3 file.

Maybe you're just not happy with the quality of some MP3 files? There's a range of audio effects that could make all the difference. You can fade sound in and out, reduce, increase or equalise the volume, insert silence, trim unwanted noise and more.

You can apply effects like this to the whole audio file, but it's better to be a little more selective. In Dexster, click

and drag the mouse cursor to select a portion of your file, then View/Zoom In to see (and hear) it in more detail. Click Play to confirm you've got the right section, and use Zoom Out or Zoom Full if you need to try again.

For even quicker working, try left-clicking on the first part of your selection, then right-clicking on the second. As well as highlighting an area of the file, Dexster will open a context menu with options like copy, paste, mix and trim. You'll be performing complex operations with the minimum of mouse clicks.

Other options process your original sound file, either with drastic effects (Vibrato, Stretch, Flanger and Phasing), or more subtle filters (High and Low Shelf, Band Pass, High and Low Pass). Not sure what they do? The Help file has a brief description, but to understand them fully it's best to try them out and find out for yourself. **PCP**

£
**UPGRADE &
SAVE
£££s**

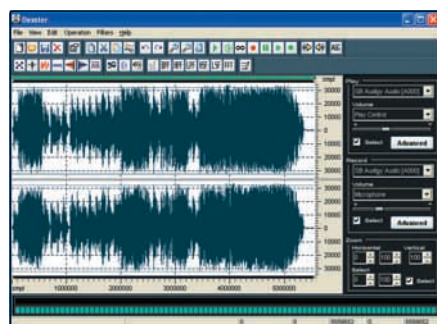
Upgrade to Dexster 1.6.1

Get more (for less)
with this special offer

The latest version of Dexster supports many more audio formats, including WAV, MP2, MP3, RAW audio, MPC, AVI (audio track), and Ogg Vorbis (version 1). There are new effects and filters, and you'll continue to get free upgrades for a year after ordering. Normally priced at \$45, you can have Dexster 1.6.1 for only \$28 (around £15). Place your order at www.softdivshareware.com/upgradedexster.html.

www.softdivshareware.com

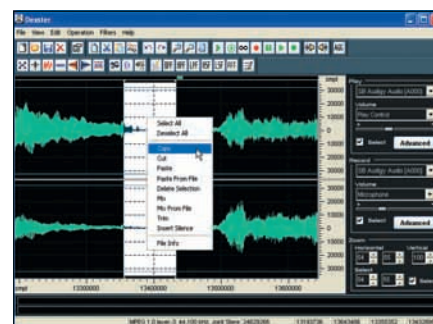
Blending MP3 files



1 Joining together two MP3 files to make one is easy with Dexster. Start by selecting File/Open and choosing the first file. Click Edit/Select to choose the entire file (the green bar above the wave form confirms everything is selected). We're going to transfer this file using the clipboard, so click Edit/Copy.



2 Open the second file, and click just before the song ends to establish a marker for Dexster. Select Edit/Paste, and the program will take your previous tune from the clipboard, and paste it after the song currently loaded. Choose the area around the 'join' and select File/Zoom In to check the results.

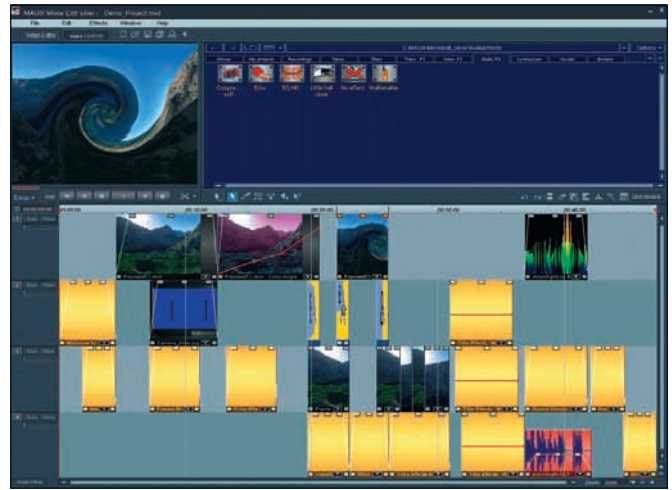


3 Click Play and listen to your work. If the silence between the tracks is too lengthy, select it, and click Operation/Trim. Or experiment with the Edit/Mix settings to blend the beginning of one track, over the end of the other. Use Edit/Undo to reverse any errors, and when you're happy, click File/Save As.



LIMITED EDITION

MAGIX Movie Edit Silver



Transform your tired old home movies into polished, professional videos with this feature-packed editor

REQUIREMENTS



Windows 98 or later,
100MB disk space

SKILL LEVEL



6 INTERMEDIATE
A little video editing knowledge will help, but it's not essential

SERIAL CODE



Not Required

INFORMATION

SUPPLIER FastTrak
INFO www.fasttrak.co.uk

RESTRICTIONS



None

MAGIX Movie Edit Silver will be a breath of fresh air for any budding video editor – take a look at our screen shots to see for yourself. There's a timeline here, but you've got four different tracks, not just one. This makes it easier to see where you're applying each audio and video effect, and to overlay effects to produce more interesting results.

You can explore the effects on offer by browsing through the tabbed menus at the top-right of your screen. Along with a range of titles, transitions and video effects you get audio tweaks such as 'Echo' or 'Hall'. You also get 22 different 'Visuals', special effects like the visualisations in Windows Media Player, and there's a range of fancy borders to frame your work.

To find out exactly what each option does, click it and watch the Preview window. Suitable effects can then be dragged into the timeline,

either directly onto a video or audio clip, or as objects in their own right.

If you're not sure where a particular effect can be dropped, just take a guess. Rather than the usual 'You can't do that' error message, Movie Edit Silver helpfully explains what you should do next.

There's little need to explore the Help file, but if you do, you'll find that some features appear to be missing. That's because Movie Edit Silver is a limited version of Movie Editor Pro 2004, leaving out functions like 16-track audio mixing, automatic scene recognition, the Video Controller and CD burning facilities.

Don't let this put you off trying the program, though, because there are still plenty of useful video-editing features. With just a little work you could turn your home movies into polished, professional videos, ready to share with family and friends. **PCP**

£
UPGRADE &
SAVE
£££s

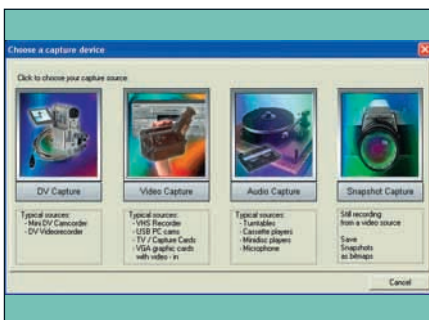
Upgrade to MAGIX Movie Edit Pro 2004

Get full editing power with this easy upgrade

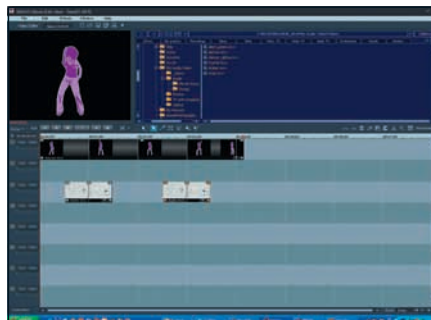
Want more video effects? Upgrade and you'll get the Video Controller, a mixing board to create your own. There's also audio and image restoration to improve movie quality, motion stabiliser to compensate for wobbly camerawork, CD/DVD authoring, and lots more. All these professional features can be yours, for the wallet-friendly sum of £50. Go to www.fasttrak.co.uk for details.

www.fasttrak.co.uk

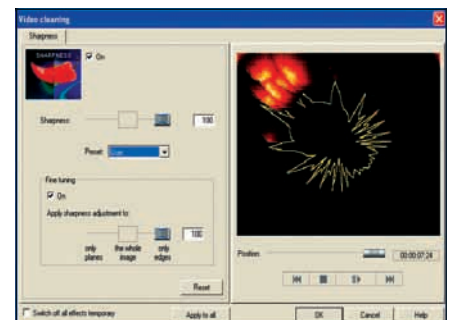
Exploring MAGIX Movie Edit Silver



1 MAGIX can import video directly from a variety of different sources: DV camcorder, video recorder, webcam and more. You can import audio files, or create stills from a video source, and produce a slideshow. Click Record under the Preview window, and then choose your source to get started.



2 Movie Edit is just as happy to work with existing video files. For examples you can use the Drives tab, and navigate to *Magix\Movie Edit_Silver\My Audio Video*. Drag the skater and dancer movies onto the timeline (press [Tab] if you don't see it), then click Play to view the results.



3 Now let's add a soundtrack. Browse to *Audio\Songs*, and drag *ThreeOhThree.ogg* onto the timeline. Now click Visuals and drag in one of the visualisations, too. Click Play again to view your work. Not happy? Double-click on the effect, and then adjust Sharpness to customise what it does.

PCPlus WAVEY'S WEB

Your expert guide to the most essential sites



Davey Winder
waveysweb@futurenet.co.uk

Davey Winder is an award-winning technology journalist and a founder member of the Internet Society of England

Communication is the name of the Internet game. Davey Winder takes a look at developments in the world of online messaging

Ever since Ray Tomlinson, the inventor of email, sent the first ever message way back in 1971, online communication has been increasingly entwining itself in our lives. Sure, much of what is communicated using the bastardisation of the English language known as 'texting' is as incomprehensible as that very first email, which was 'QWERTYIOP' for those who care. Yet be it email, instant messaging, online chat, SMS or even the relatively-new territory of Internet Telephony, the way we communicate has changed for good and, on the whole, for the better. The world has shrunk, the global village is a reality (at least at 'talking shop' level) and most importantly of all, it's truly instant.

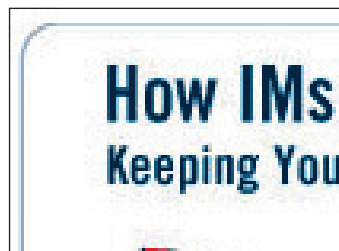


Gmail

gmail.google.com

So email is 33 years old, has prettied itself up with HTML and, more recently, video messages (webcam.tiscali.co.uk), but has much else changed? Look behind the message at the infrastructure, the transport mechanisms and the accessibility and you'll find smartphones such as the Sony Ericsson P900 (www.sonyericsson.com) bringing integrated POP3 mail to your mobile, MS Exchange Server 2003 (www.microsoft.com/exchange) offering total control over who reads what and when, and Mail2Web (www.mail2web.com) enabling you to manage your mail from just about anywhere. The one to

watch, though, has to be Gmail, which promises to integrate contextual Google searching into a web-based email system that makes all your messages available all of the time.



IMsecure

www.zonelabs.com

Some would say that Instant Messaging (IM) was born in the 1970s, alongside email in the form of sysop messages, but I'd argue that it sprang to life in 1996 when ICQ (www.icq.com) was created by Mirabilis and then consumed by AOL. Ever since the interoperability and proprietary standards battles between AOL (www.aim.com) and Microsoft (messenger.msn.com) have raged. Third-party clients such as Jabber (www.jabber.org) and Trillian (www.ceruleanstudios.com) have helped to bring things together, but my pick of the technologies to watch comes from the makers of the ZoneAlarm firewall. IMsecure Pro is essentially a firewall and spam blocker for IM, and with a predicted 1.2 billion IM spams due to be sent this year alone, it's the sort of protection we really can't do without.



Three

www.three.co.uk

Don't dismiss text messaging using the 'short message service' (SMS) as

just another kids' craze, despite the 160-character limitation (224 characters in 5-bit mode), it has an important place on your communications agenda. The boundaries between mobile phone and computer have become increasingly blurred, thanks to PC/Internet/SMS gateways such as SMS.ac (www.sms.ac) and the ICQ SMS Centre (web.icq.com/sms). But the technology to watch is actually MMS (Multimedia Messaging Service), which adds rich media such as audio and video into the mix. I-mode (www.nttdocomo.com) is already huge in Japan and, despite the slow start, Three has a big future with its video phones, especially once web integration kicks into play.



Frostbyte

www.frostbyte.co.uk

Of course, what we really need is a way of bringing all these different communications technologies together in one place, preferably revolving around our desktop PC. What we need is convergence, that business buzzword favourite, but in a real-world context. What we need is unified messaging, such as the service offered by Frostbyte (www.frostbyte.co.uk) for example. You get a free-for-life phone number which can forward voice calls to whatever other phones you have, and if they're busy it sends the voicemail directly to your email box. Oh, and don't forget good old fax, Frostbyte handles those as well. All we need next is SMS and IM rolled into the same email service. **PCP**

Site of the month



Skype

www.skype.com

The most exciting online messaging development of late has been the bringing of user-friendly, cheap and efficient Internet telephony products out of the ether and into the real world. The hype surrounding Voice over IP (VoIP) has been around for years, with big corporates implementing it for as long, see www.voip-calculators.com if you want a practical insight into how to design such a system. But systems such as the exquisite Skype have delivered low-cost (as in free) systems to ordinary Internet users that actually work better than some of the corporate systems I've seen. Developed by the same people who invented KaZaA (www.kazaa.com) it uses peer-2-peer technology for making voice telephone calls from your PC and has already hit 10 million downloads. Other systems are also worth investigating, including Free World Dialup (www.pulver.com) and Callserve (www.callserve.com).



If you know of an essential website, or are involved in a worthy contender for the title, then please let me know at waveysweb@futurenet.co.uk